

Process vcf file for multivariate simulations

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Libraries

```
#libraries_needed <- c("vcfR", "distances", "ggplot2", "fields", "stringr", "vegan", "robust", "mutnorm"
libraries_needed <- c("vcfR", "vegan", "ggplot2", "viridis", "gplots", "corrplot", "RANN",
                      "LEA", "gridExtra")

for (i in 1:length(libraries_needed)){
  # library(libraries_needed[i], character.only = TRUE, lib.loc = "/home/lotterhos/R/x86_64-pc-linux-gnu")
  #library(libraries_needed[i], character.only = TRUE, lib.loc = "/home/lotterhos/miniconda3/envs/MVP_en
    library(libraries_needed[i], character.only = TRUE) #laptop
}

## **** vcfR ****
## This is vcfR 1.12.0
##   browseVignettes('vcfR') # Documentation
##   citation('vcfR') # Citation
## **** **** ****

## Loading required package: permute

## Loading required package: lattice

## This is vegan 2.5-7

## Loading required package: viridisLite

##
## Attaching package: 'gplots'

## The following object is masked from 'package:stats':
##   lowess

## corrplot 0.92 loaded

##
## Attaching package: 'LEA'

## The following object is masked from 'package:lattice':
##   barchart
```

Load VCF and data files

```

path <- "~/Documents/GitHub/MVP-NonClinalAF/multiphenomultienvi/output_multisim/"
#setwd("/work/lotterhos/MVP-NonClinalAF") #OOD
setwd(path)
seed <- 892657863
vcf_full <- read.vcfR(paste0(path, seed, "_plusneut_MAF01.recode2.vcf.gz"))

## Scanning file to determine attributes.
## File attributes:
##   meta lines: 5
##   header_line: 6
##   variant count: 29387
##   column count: 8605
## Meta line 5 read in.
## All meta lines processed.
## gt matrix initialized.
## Character matrix gt created.
##   Character matrix gt rows: 29387
##   Character matrix gt cols: 8605
##   skip: 0
##   nrows: 29387
##   row_num: 0
## Processed variant 1000Processed variant 2000Processed variant 3000Processed variant 4000Processed variant
## All variants processed

vcf_mut <- read.vcfR(paste0(path, seed, "_VCF_causal.vcf"))

## Scanning file to determine attributes.
## File attributes:
##   meta lines: 13
##   header_line: 14
##   variant count: 354
##   column count: 8605
## Meta line 13 read in.
## All meta lines processed.
## gt matrix initialized.
## Character matrix gt created.
##   Character matrix gt rows: 354
##   Character matrix gt cols: 8605
##   skip: 0
##   nrows: 354
##   row_num: 0
## Processed variant: 354
## All variants processed

indPhen_df <- read.table(paste0(path, seed, "_ind.txt"), header=TRUE)
indPhen_df$indID <- 1:nrow(indPhen_df)

throughtime <- read.table(paste0(path, seed, "_throughtime.txt"), header=TRUE)

muts_df <- read.table(paste0(path, seed, "_muts.txt"), header=TRUE)

```

```

adp_env <- read.table("../bioclim/adaptive_env.txt", header=TRUE)
ext_env <- read.table("../bioclim/extr_env.txt", header=TRUE)
bioclim <- read.table("../bioclim/bioclim.txt", header=TRUE)

ggtheme <- theme_bw() + theme(panel.grid.major = element_blank(), panel.grid.minor = element_blank(),
                               axis.line = element_line(colour="grey20"), axis.title = element_text(colour="grey20"),
                               legend.title = element_text(colour="grey20"), legend.text = element_text(colour="grey20"))

```

Sanity check - orientation of environments

```
tail(throughtime)
```

```

##      sim.generation num_muts num_ind mean.phenotype1.mat mean.phenotype2.MTWetQ
## 45          9000      361     8624      -0.0185452      -1.78055e-03
## 46          9200      363     8635      -0.0138246      -2.44619e-03
## 47          9400      368     8606      -0.0198771      1.30746e-07
## 48          9600      368     8607      -0.0197691      -6.29428e-03
## 49          9800      337     8492      -0.0225425      -2.50511e-04
## 50         10000      354     8596      -0.0201866      -5.01022e-03
##      mean.phenotype3.MTDQ mean.phenotype4.PDM mean.phenotype5.PwarmQ
## 45          -0.0228846      -0.00234522      0.0214446
## 46          -0.0219562      -0.00200202      0.0157077
## 47          -0.0247648      -0.00611703      0.0216801
## 48          -0.0231567      -0.00783477      0.0147295
## 49          -0.0284869      -0.00389418      0.0264394
## 50          -0.0245633      -0.00207077      0.0168764
##      mean.phenotype6.PWM sd.phenotype1.mat sd.phenotype2.MTWetQ
## 45          -0.002104780      0.300166      0.346964
## 46          -0.003506380      0.302931      0.343768
## 47          -0.000251952      0.302298      0.347386
## 48          -0.005924770      0.299461      0.343905
## 49          0.004707770      0.297080      0.347101
## 50          -0.002050610      0.304379      0.347613
##      sd.phenotype3.MTDQ sd.phenotype4.PDM sd.phenotype5.PwarmQ sd.phenotype6.PWM
## 45          0.299483      0.333457      0.333447      0.318255
## 46          0.304138      0.330964      0.336028      0.321183
## 47          0.305316      0.334049      0.338383      0.321802
## 48          0.303110      0.328418      0.337579      0.321918
## 49          0.304989      0.334200      0.340306      0.322131
## 50          0.302564      0.330399      0.337779      0.322758
##      corr_phen_env_1mat corr_phen_env_2MTWetQ corr_phen_env_3MTDQ
## 45          0.918192      0.968499      0.941545
## 46          0.918878      0.969611      0.946905
## 47          0.922121      0.970056      0.945248
## 48          0.923127      0.969937      0.949468
## 49          0.921609      0.971164      0.947754
## 50          0.920422      0.969746      0.947248
##      corr_phen_env_4PDM corr_phen_env_5PwarmQ corr_phen_env_6PWM
## 45          0.968061      0.976967      0.966933
## 46          0.968431      0.977606      0.967679
## 47          0.968298      0.977212      0.967498

```

```

## 48          0.968549          0.977384          0.968107
## 49          0.969287          0.979505          0.967650
## 50          0.968022          0.978508          0.966672

head(indPhen_df)

##      seed ind_index      x      y phenotype1_mat phenotype2_MTWetQ
## 1 892657863      0 0.733354 0.099541     -0.1235820     -0.3066800
## 2 892657863      1 0.728865 0.192011      0.0155480     -0.4308770
## 3 892657863      2 0.370838 0.424631      0.2749810     -0.2833580
## 4 892657863      3 0.267083 0.769019      0.0255684     -0.3017240
## 5 892657863      4 0.642661 0.776228     -0.4432000      0.2311960
## 6 892657863      5 0.959262 0.208790     -0.1882950     -0.0365598
## phenotype3_MTDQ phenotype4_PDM phenotype5_PwarmQ phenotype6_PWM   env1_mat
## 1      0.7317760      0.4617900     -0.03751700     0.4726730  0.0262576
## 2      0.1004170      0.5377430     -0.00966542     0.5207820 -0.0188616
## 3      0.0250827     -0.1053030     -0.22063000     -0.2879880  0.3562040
## 4      0.0207409      0.5693000      0.37509700     0.2728360  0.0632020
## 5     -0.4190600      0.0802502      0.23873400     -0.0212566 -0.4083260
## 6      0.0570135      0.1040740     -0.06018340     -0.0418681 -0.2010620
##   env2_MTWetQ env3_MTDQ   env4_PDM env5_PwarmQ   env6_PWM indID
## 1     -0.3042980     0.6448770     0.4926010    -0.0528437     0.4280540     1
## 2     -0.3263850     0.1203820     0.4793460    -0.0102088     0.4663140     2
## 3     -0.2592700     0.0851666    -0.1477330    -0.2604940    -0.3400270     3
## 4     -0.3094960     0.1726670     0.5262580     0.3720160     0.3132860     4
## 5      0.2325500    -0.3789780    -0.0424752     0.2130940    -0.0580471     5
## 6      0.0714637     0.1606620     0.1026040    -0.0157558     0.0338467     6

cor(indPhen_df$phenotype1_mat, indPhen_df$env1_mat)

## [1] 0.920422

cor(indPhen_df$phenotype2_MTWetQ, indPhen_df$env2_MTWetQ)

## [1] 0.9697462

cor(indPhen_df$phenotype3_MTDQ, indPhen_df$env3_MTDQ)

## [1] 0.9472477

cor(indPhen_df$phenotype4_PDM, indPhen_df$env4_PDM)

## [1] 0.9680222

cor(indPhen_df$phenotype5_PwarmQ, indPhen_df$env5_PwarmQ)

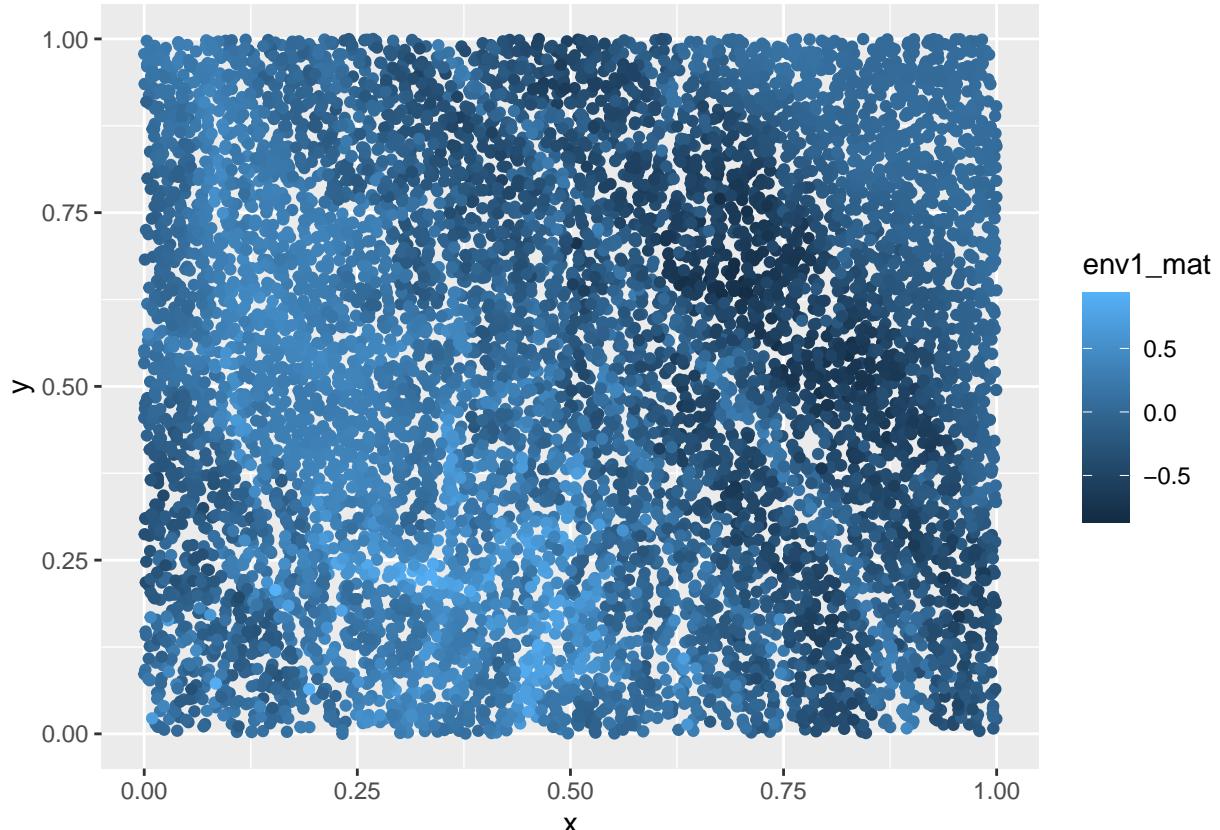
## [1] 0.9785076

```

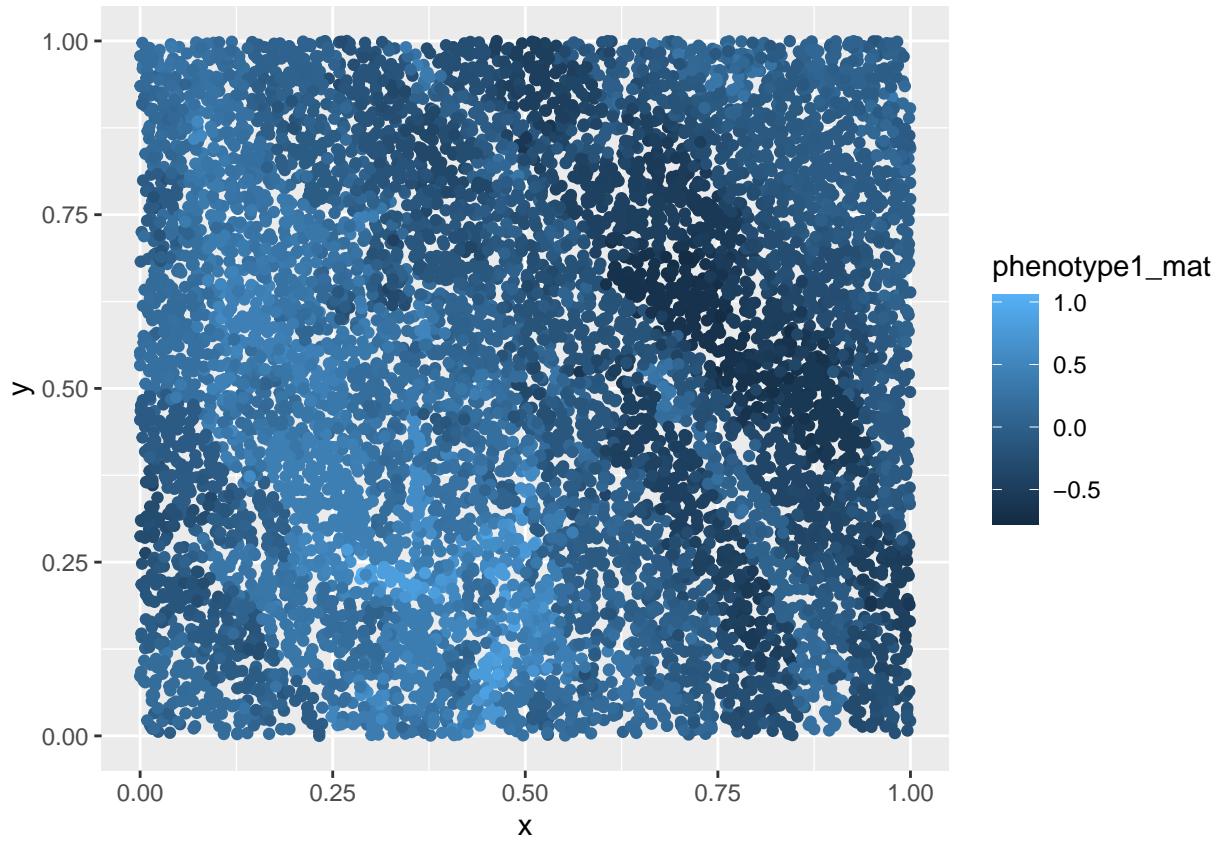
```
cor(indPhen_df$phenotype6_PWM, indPhen_df$env6_PWM)
```

```
## [1] 0.9666724
```

```
ggplot(indPhen_df) + geom_point(aes(x, y, color=env1_mat))
```



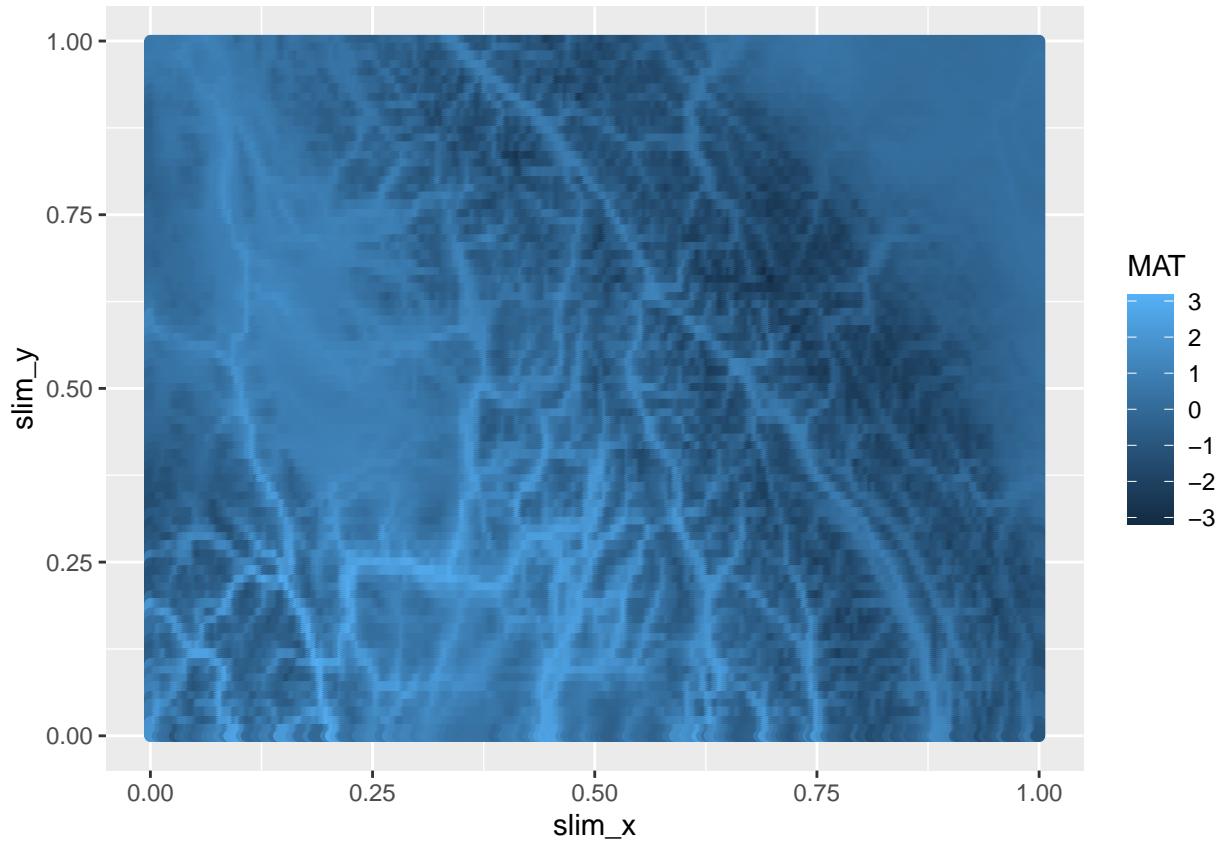
```
ggplot(indPhen_df) + geom_point(aes(x, y, color=phenotype1_mat))
```



```
head(adp_env)
```

```
##           x      y      MAT     MTWetQ      MTDQ      PWM      PDM
## 360 -123.192 53.408 0.6300150 1.253459 -0.012166195 -1.0131748 -0.9962333
## 720 -123.169 53.408 0.6300150 1.253459 -0.012166195 -1.0131748 -0.9962333
## 1080 -123.145 53.408 0.7095763 1.274450  0.029013211 -1.0131748 -0.9962333
## 1440 -123.122 53.408 0.6697956 1.263954  0.008423508 -1.0131748 -0.9147304
## 1800 -123.099 53.408 0.6697956 1.263954  0.008423508 -1.0131748 -0.9147304
## 2160 -123.075 53.408 0.6697956 1.263954  0.008423508 -0.9718891 -0.9147304
##          PWarmQ    slim_x  slim_y
## 360 -0.4048526 0.000000000 1
## 720 -0.4048526 0.002743648 1
## 1080 -0.3838182 0.005606585 1
## 1440 -0.3627838 0.008350233 1
## 1800 -0.3627838 0.011093880 1
## 2160 -0.3417493 0.013956817 1
```

```
ggplot(adp_env) + geom_point(aes(slim_x, slim_y, color=MAT))
```



Add information to SNPs and individuals

```

geno_full <- vcf_full@gt[,-1]
dim(geno_full)

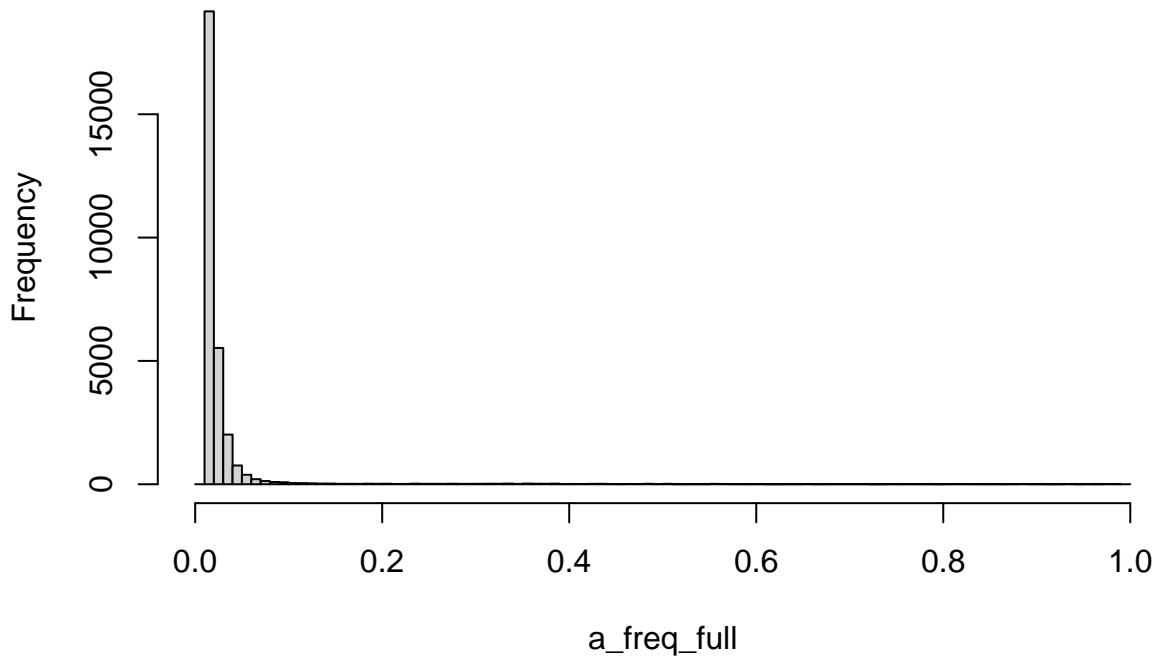
## [1] 29387 8596

position_full <- getPOS(vcf_full)
rown <- vcf_full@fix[, "ALT"] # mutation ID
causal_mut_locs <- which(rown %in% as.character(muts_df$mutID)) # causal mutations
G_full <- matrix(NA, nrow = nrow(geno_full), ncol = ncol(geno_full))
G_full[geno_full %in% c("0/0", "0|0")] <- 0
G_full[geno_full %in% c("0/1", "1/0", "1|0", "0|1")] <- 1
G_full[geno_full %in% c("1/1", "1|1")] <- 2

a_freq_full <- rowSums(G_full)/(2*ncol(G_full))
hist(a_freq_full, breaks=seq(0,1,0.01))

```

Histogram of a_freq_full



```
if (!identical(sort(unique(unlist(as.numeric(G_full)))), as.numeric(0:2))){  
  print("Error: full genotype matrix not uniquely 012")  
  break  
}
```

Subsampling individuals from landscape

```
indPhen_df$subset <- FALSE  
set.seed(9801235)  
whichinds <- sort(sample(1:nrow(indPhen_df), size=1000, replace=FALSE))  
indPhen_df$subset[whichinds] <- TRUE  
sum(indPhen_df$subset) #sanity check  
  
## [1] 1000  
  
G_full_subset <- G_full[,which(indPhen_df$subset)]
```

Assign Linkage groups

```
# Assign loci to LG groups  
numLGs <- ceiling(max(as.numeric(vcf_full@fix[, "POS"]))/50000)  
for (LG in 1:numLGs){  
  sites_low <- (LG-1)*50000+1  
  sites_high <- (LG)*50000
```

```

pos <- as.numeric(vcf_full@fix[, "POS"])
whichlocs <- pos >= sites_low & pos <= sites_high
vcf_full@fix[whichlocs, "CHROM"] <- as.numeric(LG)
}
table(vcf_full@fix[, "CHROM"])

##          1   10   11   12   13   14   15   16   17   18   19   2   20   3   4   5
## 1491 1493 1469 1419 1536 1485 1450 1450 1479 1518 1488 1434 1474 1463 1529 1419
##          6    7    8    9
## 1435 1452 1423 1480

# Assign unique names to each locus
head(vcf_full@fix)

##      CHROM POS ID REF ALT QUAL FILTER INFO
## [1,] "1"   "8" NA "0" "1" NA   "PASS" NA
## [2,] "1"   "27" NA "0" "1" NA   "PASS" NA
## [3,] "1"   "34" NA "0" "1" NA   "PASS" NA
## [4,] "1"   "81" NA "0" "1" NA   "PASS" NA
## [5,] "1"   "97" NA "0" "1" NA   "PASS" NA
## [6,] "1"   "153" NA "0" "1" NA   "PASS" NA

vcf_full@fix[,"INFO"] <- paste0(vcf_full@fix[, "CHROM"], "-", vcf_full@fix[, "POS"])
if (sum(duplicated(vcf_full@fix[, "POS"]))>0){
  dups <- which(duplicated(vcf_full@fix[, "POS"]))
  vcf_full@fix[dups, "INFO"] <- paste0(vcf_full@fix[dups, "INFO"], "_2")
}
b <- 3
while (sum(duplicated(vcf_full@fix[, "INFO"]))>0){
  dups <- which(duplicated(vcf_full@fix[, "INFO"]))
  vcf_full@fix[dups, "INFO"] <- gsub(paste0("_", b-1),
                                         paste0("_", b),
                                         x = vcf_full@fix[dups, "INFO"])
  b <- b+1
  if (b==10){print("problem in naming loci"); break}
}

# Check duplicated locus names
if(sum(duplicated(vcf_full@fix[dups, "INFO"]))>0){print("Error: duplicate locus names");break}

head(vcf_full@fix)

##      CHROM POS ID REF ALT QUAL FILTER INFO
## [1,] "1"   "8" NA "0" "1" NA   "PASS" "1-8"
## [2,] "1"   "27" NA "0" "1" NA   "PASS" "1-27"
## [3,] "1"   "34" NA "0" "1" NA   "PASS" "1-34"
## [4,] "1"   "81" NA "0" "1" NA   "PASS" "1-81"
## [5,] "1"   "97" NA "0" "1" NA   "PASS" "1-97"
## [6,] "1"   "153" NA "0" "1" NA   "PASS" "1-153"

```

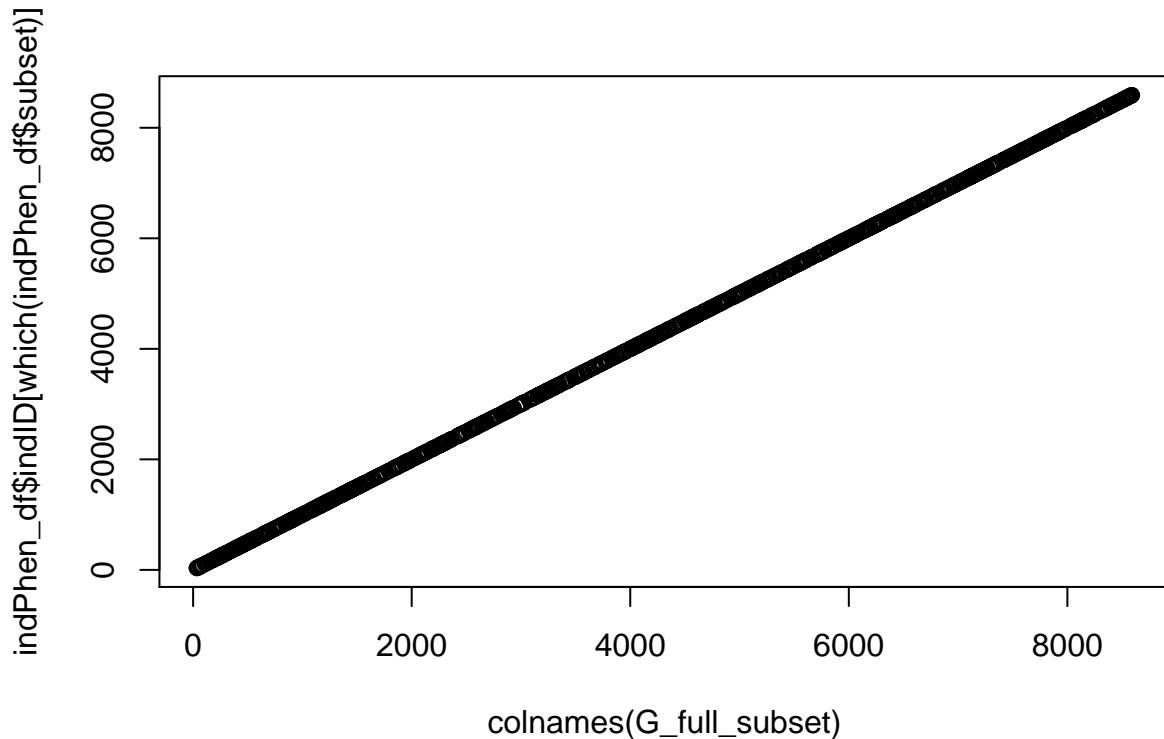
```
rownames(G_full_subset) = vcf_full@fix[, "INFO"]
```

Add individual and locus names to G_full subset

```
colnames(G_full_subset) = indPhen_df$indID[which(indPhen_df$subset)]
head(G_full_subset[, 1:5])
```

```
##      34 35 45 46 47
## 1-8    0  0  0  0  0
## 1-27   0  0  0  0  0
## 1-34   0  0  0  0  0
## 1-81   0  0  0  0  0
## 1-97   0  0  0  0  0
## 1-153  0  0  0  0  0
```

```
plot(colnames(G_full_subset), indPhen_df$indID[which(indPhen_df$subset)])
```



```
## Mutation stuff
a_freq_subset <- as.numeric(rowSums(G_full_subset)/(2*ncol(G_full_subset)))
# should have 1000 individuals
#hist(a_freq_subset)

muts_full10 <- data.frame(seed = as.character(seed),
                            VCFrow = 1:nrow(vcf_full@gt),
                            mutID = vcf_full@fix[, "ALT"],
                            LG = as.integer(vcf_full@fix[, "CHROM"])),
```

```

pos_pyslim = as.integer(vcf_full@fix[, "POS"]),
mutname = vcf_full@fix[, "INFO"],
a_freq_full = a_freq_full,
a_freq_subset = a_freq_subset)

if(!identical(rownames(G_full_subset), muts_full0$mutname)){Print("Error mut names out of order");break}

head(muts_full0)

##      seed VCFrow mutID LG pos_pyslim mutname a_freq_full a_freq_subset
## 1 892657863     1    1       8   1-8  0.01442531  0.0175
## 2 892657863     2    1      27   1-27  0.01384365  0.0120
## 3 892657863     3    1      34   1-34  0.03530712  0.0370
## 4 892657863     4    1      81   1-81  0.03187529  0.0330
## 5 892657863     5    1      97   1-97  0.02030014  0.0170
## 6 892657863     6    1     153   1-153 0.01692648  0.0225

dim(muts_full0)

## [1] 29387     8

muts_full0$mutID <- as.character(muts_full0$mutID) # all loci, but only causal loci have unique ID
muts_df$mutID <- as.character(muts_df$mutID) #only causal loci, unique ID from SlIM

muts_full <- merge(muts_full0, muts_df, by=c("mutID", "seed"), all.x=TRUE)
muts_full <- muts_full[order(muts_full$VCFrow),]
head(muts_full)

##      mutID      seed VCFrow LG pos_pyslim mutname a_freq_full a_freq_subset
## 1 1 892657863     1    1       8   1-8  0.01442531  0.0175
## 2 1 892657863     2    1      27   1-27  0.01384365  0.0120
## 3 1 892657863     3    1      34   1-34  0.03530712  0.0370
## 4 1 892657863     4    1      81   1-81  0.03187529  0.0330
## 5 1 892657863     5    1      97   1-97  0.02030014  0.0170
## 6 1 892657863     6    1     153   1-153 0.01692648  0.0225

##      muttype p mut1.mat.Effect mut2.MTWetQ.Effect mut3_MTDQ.Effect
## 1 <NA> NA NA NA NA
## 2 <NA> NA NA NA NA
## 3 <NA> NA NA NA NA
## 4 <NA> NA NA NA NA
## 5 <NA> NA NA NA NA
## 6 <NA> NA NA NA NA

##      mut4_PDM.Effect mut5_PwarmQ.Effect mut6_PWM.Effect
## 1 NA NA NA
## 2 NA NA NA
## 3 NA NA NA
## 4 NA NA NA
## 5 NA NA NA
## 6 NA NA NA

```

```

dim(muts_full)

## [1] 29387    16

if(!identical(rownames(G_full_subset), muts_full$mutname)){Print("Error mut names out of order");break}
# Are there any missing values for LG?
if(sum(is.na(muts_full$LG))>0){Print("Error: Missing LGs"); break}

```

Add effect sizes to muts table

```

head(muts_full)

##   mutID      seed VCFrow LG pos_pyslim mutname a_freq_full a_freq_subset
## 1     1 892657863     1 1          8  1-8  0.01442531  0.0175
## 2     1 892657863     2 1         27  1-27  0.01384365  0.0120
## 3     1 892657863     3 1         34  1-34  0.03530712  0.0370
## 4     1 892657863     4 1         81  1-81  0.03187529  0.0330
## 5     1 892657863     5 1         97  1-97  0.02030014  0.0170
## 6     1 892657863     6 1        153  1-153 0.01692648  0.0225
##   muttype p mut1.mat.Effect mut2.MTWetQ.Effect mut3_MTDQ.Effect
## 1 <NA> NA           NA           NA           NA
## 2 <NA> NA           NA           NA           NA
## 3 <NA> NA           NA           NA           NA
## 4 <NA> NA           NA           NA           NA
## 5 <NA> NA           NA           NA           NA
## 6 <NA> NA           NA           NA           NA
##   mut4_PDM.Effect mut5_PwarmQ.Effect mut6_PWM.Effect
## 1       NA           NA           NA
## 2       NA           NA           NA
## 3       NA           NA           NA
## 4       NA           NA           NA
## 5       NA           NA           NA
## 6       NA           NA           NA

muts_full$mut1.mat.Effect <- as.numeric(muts_full$mut1.mat.Effect)
muts_full$mut2.MTWetQ.Effect <- as.numeric(muts_full$mut2.MTWetQ.Effect)
muts_full$mut3_MTDQ.Effect <- as.numeric(muts_full$mut3_MTDQ.Effect)
muts_full$mut4_PDM.Effect <- as.numeric(muts_full$mut4_PDM.Effect)
muts_full$mut5_PwarmQ.Effect <- as.numeric(muts_full$mut5_PwarmQ.Effect)
muts_full$mut6_PWM.Effect <- as.numeric(muts_full$mut6_PWM.Effect)
muts_full$causal <- FALSE
muts_full$causal[muts_full$mutID!=1] <- TRUE
sum(muts_full$causal)

## [1] 92

```

FILTER OUT ALLELS WITH MAF < 0.01 AFTER SAMPLING

```

if(!identical(as.character(muts_full$mutname), as.character(rownames(G_full_subset)))){print("Error")}

#muts_full$isMAF01 <- FALSE
rm_loci <- which(muts_full$a_freq_subset < 0.01 | muts_full$a_freq_subset > 0.99)
#muts_full$isMAF01[rm_loci] <- rep(TRUE, length=length(rm_loci))

num_multiallelic <- sum((!complete.cases(G_full_subset)))
rm_loci <- sort(c(rm_loci, which(!complete.cases(G_full_subset)))))

numCausalLowMAFsample <- sum(muts_full$a_freq_subset < 0.01 & muts_full$causal)

# Filter out MAF loci from G_full_subset

if(length(rm_loci)>0){
  G_full_subset <- G_full_subset[-rm_loci,]
  muts_full <- muts_full[-rm_loci,]
}
if(!identical(as.character(muts_full$mutname), as.character(rownames(G_full_subset)))){print("Error")}

dim(G_full_subset)

## [1] 26371 1000

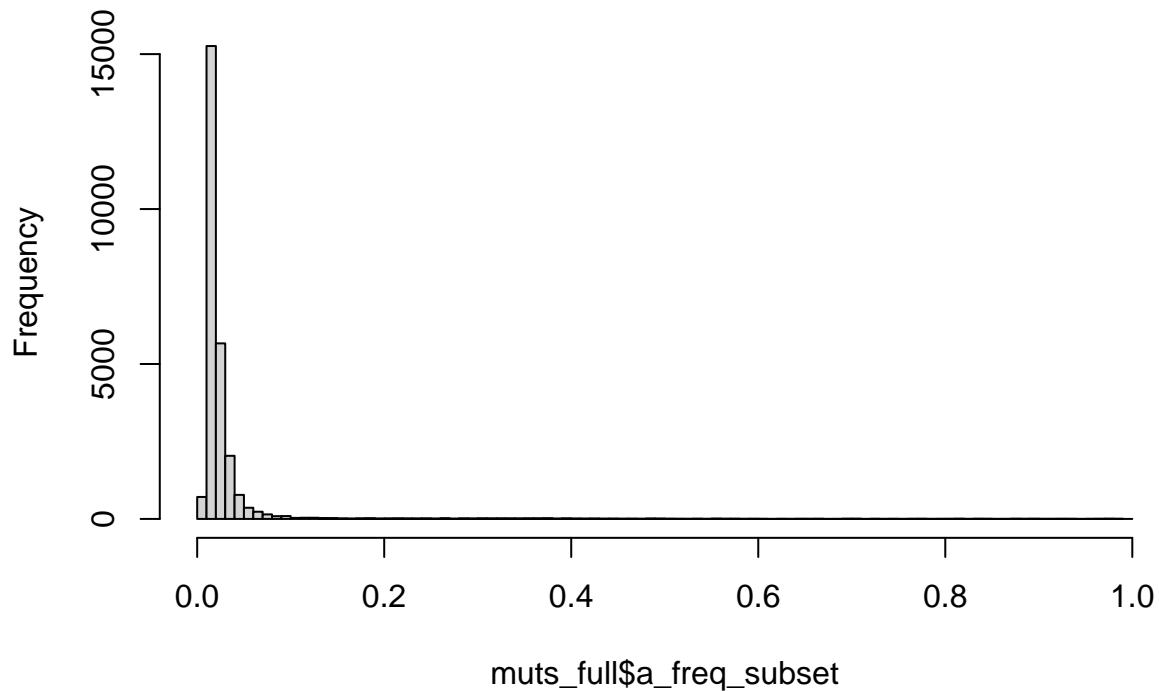
head(G_full_subset[,1:10])

##      34 35 45 46 47 65 66 73 86 107
## 1-8    0  0  0  0  0  2  0  0  0   0
## 1-27   0  0  0  0  0  0  0  0  0   0
## 1-34   0  0  0  0  0  0  0  0  0   0
## 1-81   0  0  0  0  0  0  0  0  0   0
## 1-97   0  0  0  0  0  0  0  0  0   0
## 1-153  0  0  0  0  0  0  0  0  0   0

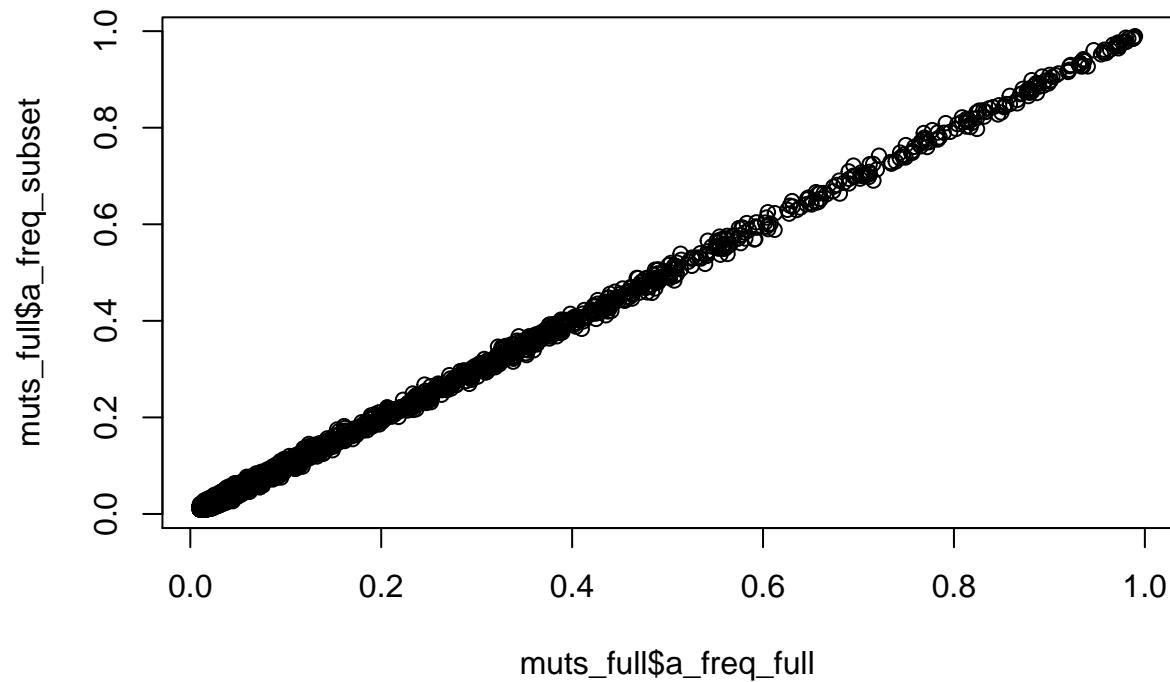
hist(muts_full$a_freq_subset, breaks=seq(0,1,0.01)) #After MAF

```

Histogram of muts_full\$a_freq_subset



```
plot(muts_full$a_freq_full, muts_full$a_freq_subset) #sanity check
```



muts_full\$a_freq_full

Correlation plots

```
plotmain="Mutivariate simulation"
mut_effect_cols <- c("mut1.mat.Effect", "mut2.MTWetQ.Effect",
                      "mut3_MTDQ.Effect", "mut4_PDM.Effect",
```

```

    "mut5_PwarmQ.Effect", "mut6_PWM.Effect")

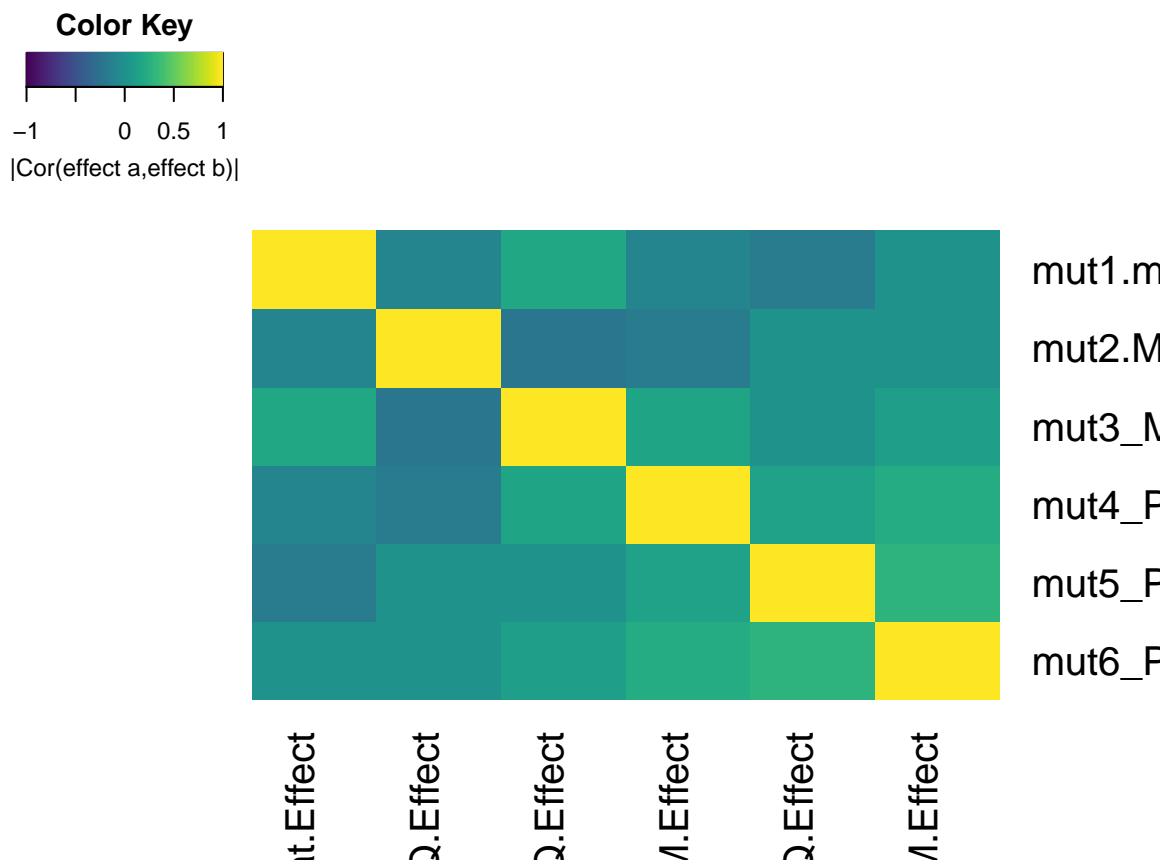
which_mut_effect_cols <- which(colnames(muts_full) %in% mut_effect_cols)

muteffect_cormat <- cor(muts_full[,which_mut_effect_cols], use = "complete.obs")

env_cormat <- cor(adp_env[,c(3,4,5,7,8,6)]) #hard coding

heatmap.2(muteffect_cormat, Rowv = NA, Colv=NA,
          scale="none", col= viridis(100), density.info = "none",
          dendrogram="none",
          trace = "none",
          key.xlab="|Cor(effect a,effect b)|")

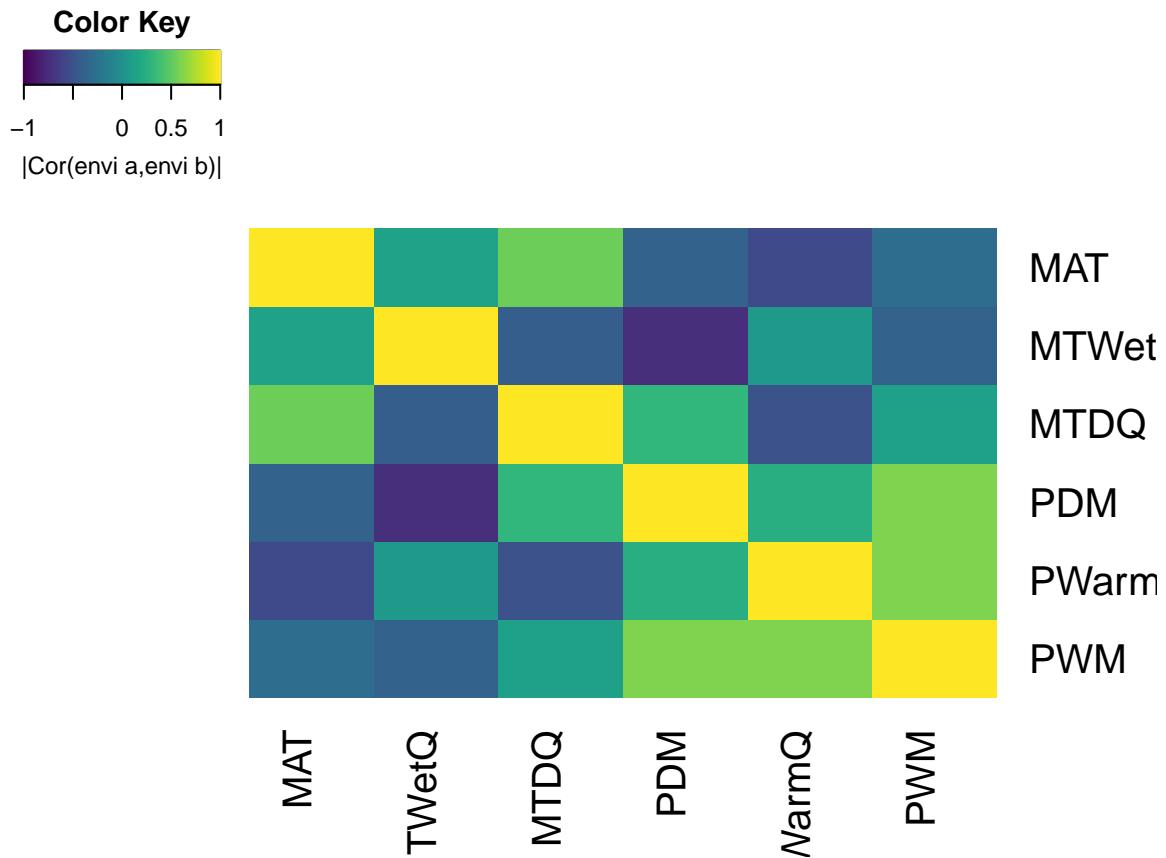
```



```

heatmap.2(env_cormat, Rowv = NA, Colv=NA,
          scale="none", col= viridis(100),dendrogram="none",
          trace = "none", density.info = "none",
          key.xlab="|Cor(envi a,envi b)|")

```



```
# Mutation effect size correlations vs. environmental correlations
```

```
# TO DO OUTPUT TO PDF
colnames(muteffect_cormat) <- c("MAT effect size",
                                 "MTWetQ effect size",
                                 "MTDQ effect size",
                                 "PDM effect size",
                                 "PwarmQ effect size",
                                 "PWM effect size")
rownames(muteffect_cormat) <- colnames(muteffect_cormat)

#plot.new()
pdf("plots_MutEffectCorMat.pdf", width=7, height=5)
corrplot(muteffect_cormat, type = "upper", order = "original",
         tl.col = "black", tl.srt = 45)
dev.off()
```

```
## pdf
## 2

# corrplot(env_cormat, type = "upper", order = "original",
#           tl.col = "black", tl.srt = 45)

#corrplot(cor(adp_env[,c(1,2,3,4,5,7,8,6)]), type = "upper", order = "original",
#          tl.col = "black", tl.srt = 45) #hard coding
```

```

# Sanity check that muts_full mutations line up with G_full_subset
if(nrow(muts_full)!=nrow(G_full_subset)){print("Error 1: mutation data frames have different number of rows")}

num_causal_postfilter <- sum(muts_full$causal)
num_causal_prefilter <- nrow(vcf_muts@fix)
num_neut_postfilter <- sum(!muts_full$causal)
num_neut_prefilter <- sum((vcf_full@fix[,"ALT"]=="1"))

dim(G_full_subset)

## [1] 26371 1000

subset_indPhen_df <- indPhen_df[indPhen_df$subset,]

dim(subset_indPhen_df)

## [1] 1000 18

if(!identical(subset_indPhen_df$indID, sort(subset_indPhen_df$indID))){print("Error individuals in wildtype and subset do not match")}


```

Do causal SNPs show clinal patterns with environments?

```

dim(G_full_subset[which(muts_full$causal),])

## [1] 90 1000

muts <- G_full_subset[which(muts_full$causal),]

dim(muts)

## [1] 90 1000

mut_freq <- list()

#plot(sort(unique(MAT)), rep(0,18), ylim=c(0,1))

(env_cols <- grep("env", colnames(subset_indPhen_df)))

## [1] 11 12 13 14 15 16

for (env in 1:6){
  print("start")
  ENVI <- round(subset_indPhen_df[,env_cols[env]], 1)
  mut_freq_ENV <- matrix(NA, nrow=nrow(muts), ncol=length(unique(ENVI)))
  colnames(mut_freq_ENV) <- sort(unique(ENVI))
  for (i in 1:nrow(muts)){
    tab <- t(table(ENVI, muts[i,]))
    mut_freq_ENV[i,] <- tab
  }
}
```

```

num <- as.numeric(rownames(tab))
a <- unlist(colSums(tab*num)/(colSums(tab)*2))
mut_freq_ENV[i,] <- a
#if(i%%3==0 | i%%4==0){mut_freq_ENV[i,] <- a}else{mut_freq_ENV[i,] <- 1-a}
#print(i)
}
mut_freq[[env]] <- mut_freq_ENV
print(env)
}

```

```

## [1] "start"
## [1] 1
## [1] "start"
## [1] 2
## [1] "start"
## [1] 3
## [1] "start"
## [1] 4
## [1] "start"
## [1] 5
## [1] "start"
## [1] 6

```

```

# Each item in this list is an environment
# Within each item is a matrix with rows corresponding to alleles
# and columns corresponding to the environmental variable
str(mut_freq)

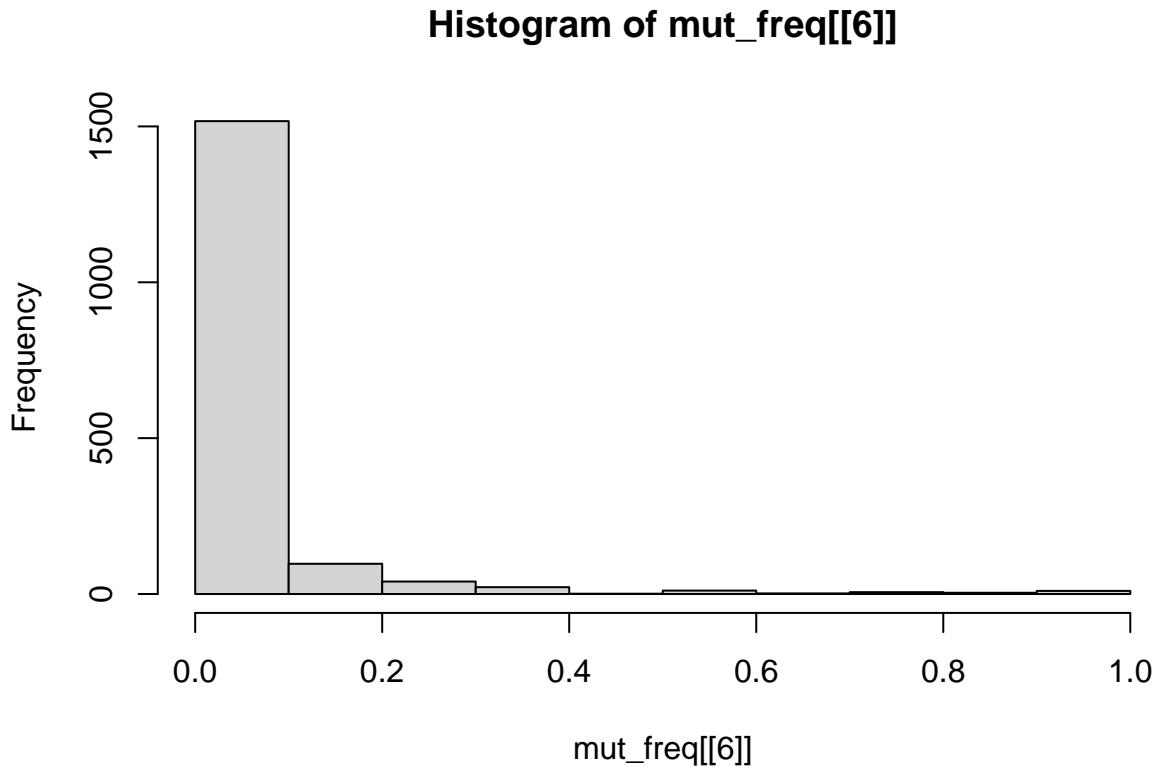
```

```

## List of 6
## $ : num [1:90, 1:18] 0 1 0 0 1 1 0 0 0 0 ...
## ..- attr(*, "dimnames")=List of 2
## ...$ : NULL
## ...$ : chr [1:18] "-0.8" "-0.7" "-0.6" "-0.5" ...
## $ : num [1:90, 1:12] 0 0 0 0 0 0 0 0 0 1 ...
## ..- attr(*, "dimnames")=List of 2
## ...$ : NULL
## ...$ : chr [1:12] "-0.5" "-0.4" "-0.3" "-0.2" ...
## $ : num [1:90, 1:20] 0 1 0 0 0 0 0 0 0 0 ...
## ..- attr(*, "dimnames")=List of 2
## ...$ : NULL
## ...$ : chr [1:20] "-0.7" "-0.6" "-0.5" "-0.4" ...
## $ : num [1:90, 1:14] 0 0 0 0 0 0 0 0 0 0 ...
## ..- attr(*, "dimnames")=List of 2
## ...$ : NULL
## ...$ : chr [1:14] "-0.6" "-0.5" "-0.4" "-0.3" ...
## $ : num [1:90, 1:16] 0 0 0 0 0 0 0 0 0 0 ...
## ..- attr(*, "dimnames")=List of 2
## ...$ : NULL
## ...$ : chr [1:16] "-0.8" "-0.7" "-0.6" "-0.5" ...
## $ : num [1:90, 1:19] 0 0 0 0 0 0 0 0 0 0 ...
## ..- attr(*, "dimnames")=List of 2
## ...$ : NULL
## ...$ : chr [1:19] "-0.7" "-0.6" "-0.5" "-0.4" ...

```

```
hist(mut_freq[[6]])
```

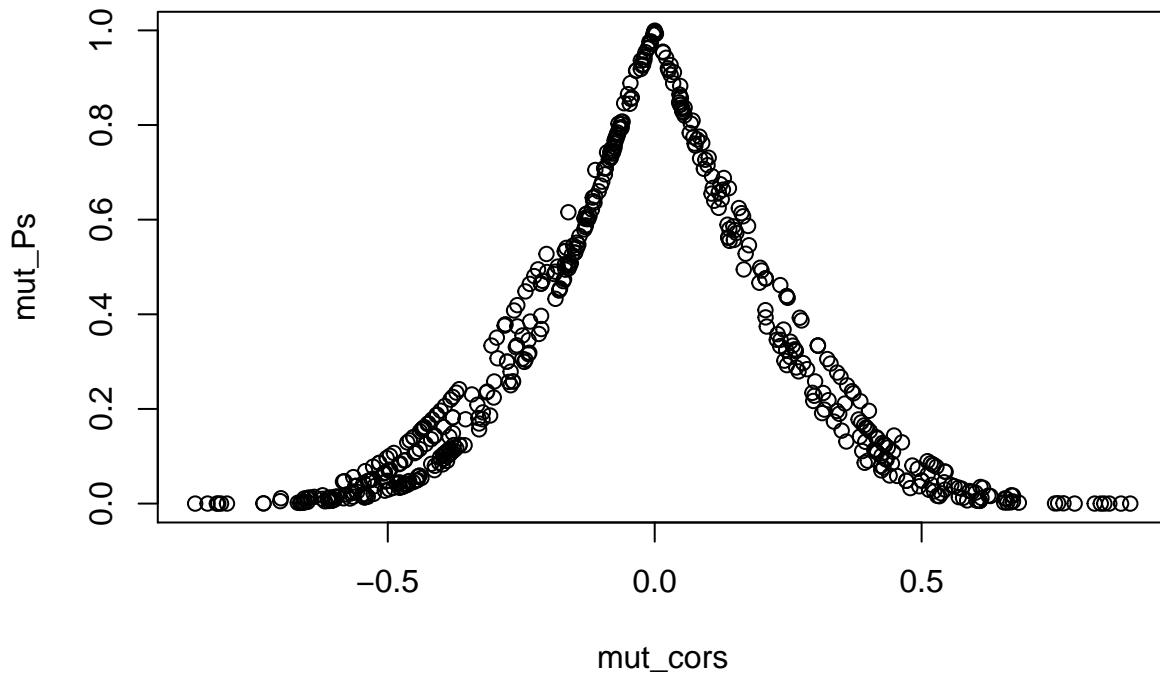


```
length(mut_freq)
```

```
## [1] 6
```

```
mut_cors <- matrix(NA, nrow=90, ncol=6)
mut_Ps <- matrix(NA, nrow=90, ncol=6)

for (i in 1:length(mut_freq)){
  env <- as.numeric(colnames(mut_freq[[i]]))
  for (j in 1:90){#hard coding for number loci
    mut_cors[j,i] <- cor.test(env, mut_freq[[i]][j,])$est
    mut_Ps[j,i] <- cor.test(env, mut_freq[[i]][j,])$p.value
  }
}
plot(mut_cors, mut_Ps)
```



```
dim(mut_Ps)
```

```
## [1] 90 6
```

Proportion of significant QTN clines after Bonferroni correction based only on the number of tests done on QTNs

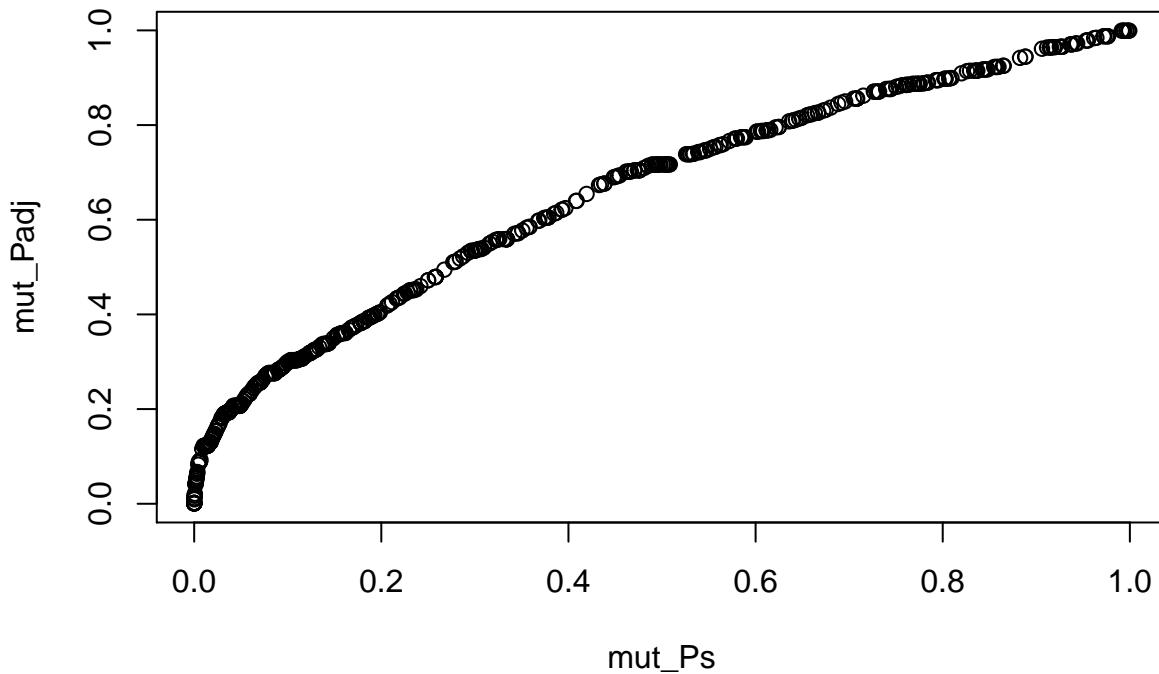
```
bonf <- 0.05/(nrow(mut_Ps))
mut_sigclines <- mut_Ps < bonf
colSums(mut_sigclines)/nrow(mut_sigclines)
```

```
## [1] 0.10000000 0.00000000 0.05555556 0.00000000 0.03333333 0.00000000
```

Proportion of significant QTN clines after Benjamini-Hochberg correction based only on the number of tests done on QTNs

Note that these numbers and the ones above are conservative in the sense that we're only correcting for multiple tests on QTN loci and not the whole genome

```
mut_Padj <- matrix(p.adjust(mut_Ps,method="BH"), ncol=6)
plot(mut_Ps, mut_Padj)
```



```
colSums(mut_Padj<0.05)/nrow(mut_Ps)
```

```
## [1] 0.1111111 0.0000000 0.07777778 0.0000000 0.04444444 0.02222222
```

```
names(subset_indPhen_df[env_cols])
```

```
## [1] "env1_mat"      "env2_MTWetQ"   "env3_MTDQ"     "env4_PDM"      "env5_PwarmQ"
## [6] "env6_PWM"
```

Visualize SNP frequency patterns across environmental clines

This is a matplot, which draws each line randomly with a color and shape

This next plotting code draws each line with a color according to it's correlation between allele frequency and environment, and a solid line for non-clinal alleles and a dashed line for clinal alleles.

```
val2col<-function(z, zlim, col = turbo(100, begin=0, end=0.8), breaks){
  if(!missing(breaks)){
    if(length(breaks) != (length(col)+1)){stop("must have one more break than colour")}
  }
  if(missing(breaks) & !missing(zlim)){
    zlim[2] <- zlim[2]+c(zlim[2]-zlim[1])*1E-3 #adds a bit to the range in both directions
    zlim[1] <- zlim[1]-c(zlim[2]-zlim[1])*1E-3
    breaks <- seq(zlim[1], zlim[2], length.out=(length(col)+1))
  }
  if(missing(breaks) & missing(zlim)){
    zlim <- range(z, na.rm=TRUE)
    zlim[2] <- zlim[2]+c(zlim[2]-zlim[1])*1E-3 #adds a bit to the range in both directions
    zlim[1] <- zlim[1]-c(zlim[2]-zlim[1])*1E-3
    breaks <- seq(zlim[1], zlim[2], length.out=(length(col)+1))
  }
}
```

```

}

CUT <- cut(z, breaks=breaks)
colorlevels <- col[match(CUT, levels(CUT))] # assign colors to heights for each point
return(colorlevels)
}

dim(mut_cors)

## [1] 90 6

dim(mut_Padj)

## [1] 90 6

pdf("plot_AFpatterns.pdf", width=5, height=4)
for (i in 1:6){ #loop through climates
  enva <- as.numeric(colnames(mut_freq[[i]]))
  mutcor_enva <- abs(mut_cors[,i])
  mutP_enva <- mut_Padj[,i]
  mutsline <- as.numeric(mutP_enva<0.05) + 1
  mutslwd <- as.numeric(mutP_enva>0.05) + 1
  mutscol <- val2col(mutcor_enva, 1.0, breaks=seq(0,1,by=0.01))
  plot(c(min(enva), max(enva)), c(0,1), col="white", type="l", bty="l", ylab="", xlab="", xaxt = "n",
       main=colnames(indPhen_df$env_cols[i]))
  for(j in 1:nrow(muts)){ #loop through mutations
    points(enva, mut_freq[[i]][j,], col=mutscol[j], lwd=mutslwd[j], lty=mutsline[j], type="l")
  }
}
dev.off()

## pdf
## 2

```

Calculate RDA without nuisance environmental variables and without structure correction

```

rdaout <- rda(t(G_full_subset) ~ subset_indPhen_df$env1_mat +
               subset_indPhen_df$env2_MTWetQ +
               subset_indPhen_df$env3_MTDQ +
               subset_indPhen_df$env4_PDM +
               subset_indPhen_df$env5_PwarmQ +
               subset_indPhen_df$env6_PWM
               )

write.table(t(G_full_subset), "../tutorial/Genotypes.txt", col.names =FALSE, row.names=FALSE)
write.table(subset_indPhen_df[,-c(1,17,18)], "../tutorial/Individuals.txt", col.names =TRUE, row.names=FALSE)
write.table(muts_full[,c(4,5,6,8,17)], "../tutorial/SNPs.txt", col.names =TRUE, row.names=FALSE)

```

RDA Outputs

```
#str(rdaout)
scores <- scores(rdaout, choices=1:6)
scores

## $species
##          RDA1        RDA2        RDA3        RDA4
## 1-8      -9.573672e-03 -4.846651e-02  1.688204e-03  1.668423e-02
## 1-27     -1.684736e-02 -1.117227e-02 -4.181609e-02 -9.061324e-03
## 1-34     -6.587686e-03  1.473920e-02 -7.903150e-02 -9.554282e-03
## 1-81      8.154956e-02  3.693784e-02 -6.263948e-03  3.039403e-02
## 1-97      3.396345e-02 -9.319179e-03  6.423649e-03 -3.427415e-02
## 1-153     7.836793e-02  1.927015e-02 -8.299484e-03  3.836295e-02
## 1-154     -6.071557e-03 -1.951689e-02  2.519275e-02 -1.938889e-02
## 1-206     -8.431487e-03  1.723554e-02 -8.783225e-02 -9.662746e-03
## 1-287     -1.932803e-02 -4.415478e-02 -1.400912e-03  3.377991e-02
## 1-304     -1.606371e-02 -3.697456e-03  6.134560e-03 -5.656507e-03
## 1-346     -2.992324e-03 -6.410165e-02 -2.381476e-02 -9.212822e-03
## 1-364     -2.843159e-02 -2.513990e-02 -7.050057e-02 -2.020961e-02
## 1-368     -2.574312e-02 -4.330283e-03  1.337761e-02  1.076769e-03
## 1-389      7.122839e-02  1.534717e-02 -8.706470e-03  3.590087e-02
## 1-495     -5.009572e-01  6.527123e-02 -8.427378e-02  1.291251e-01
## 1-508      5.748613e-02  1.535086e-02 -7.094506e-03  4.183853e-02
## 1-525     -5.851245e-03 -2.172102e-02  2.776825e-02 -2.122716e-02
## 1-585     -1.182291e-01  1.935562e-01 -1.908419e-01 -2.003897e-02
## 1-689      1.754199e-02 -1.548059e-02 -3.089852e-03 -6.519632e-02
## 1-837     -1.309170e-02 -9.680927e-03 -5.166149e-02 -2.865286e-03
## 1-846      7.252422e-02  1.521649e-02 -9.687286e-03  4.016340e-02
## 1-869     -1.073277e-01 -9.911032e-02 -1.882723e-01 -2.077766e-02
## 1-921      1.908466e-02 -8.441897e-03  4.474440e-03 -8.818528e-02
## 1-933     -3.775210e-04 -2.281940e-02 -3.312544e-03 -1.834692e-03
## 1-1024    -1.675941e-02  7.001290e-03  3.702305e-03  1.368503e-02
## 1-1029    -2.722641e-02 -6.155809e-03  5.721674e-03 -2.463667e-02
## 1-1091    -1.712859e-02 -8.713044e-02  5.956531e-03  5.425262e-02
## 1-1113    -7.137127e-03 -2.531289e-02  3.079289e-02 -2.167200e-02
## 1-1155    -2.985482e-02 -1.619422e-02 -5.822728e-02 -3.945020e-03
## 1-1161    -1.712859e-02 -8.713044e-02  5.956531e-03  5.425262e-02
## 1-1224    -2.722641e-02 -6.155809e-03  5.721674e-03 -2.463667e-02
## 1-1259    -5.120608e-03 -9.916956e-03  1.765573e-02  4.518898e-03
## 1-1301    -3.511893e-02 -1.338272e-03 -7.126546e-03  2.181189e-02
## 1-1317    -3.775210e-04 -2.281940e-02 -3.312544e-03 -1.834692e-03
## 1-1349     5.866869e-02  3.981476e-02 -1.123190e-03 -7.834804e-02
## 1-1357     4.276415e-02  9.125693e-03  7.275502e-03 -4.797839e-02
## 1-1388    -2.406090e-02  1.595415e-02  4.875456e-02  2.931818e-02
## 1-1444    -4.607500e-03  2.517266e-02  1.095703e-02 -1.505990e-02
## 1-1494    -9.388687e-03 -1.366963e-02  9.032361e-03 -2.797781e-04
## 1-1499     1.571208e-01  2.791793e-02 -2.259494e-02  7.774688e-02
## 1-1538    -2.002619e-02 -7.872503e-03  1.118014e-02 -4.921513e-03
## 1-1566    -9.449896e-03  1.736051e-02  3.420971e-02 -2.961309e-03
## 1-1600     2.837994e-03  1.257107e-02  5.053075e-03 -1.394714e-02
## 1-1635    -8.442653e-03  2.495356e-02  2.521848e-02 -1.867120e-03
## 1-1650     1.365962e-01  2.268607e-02 -2.130717e-02  6.951824e-02
```

```

## 1-1685      -1.717523e-02  6.769439e-03  5.469643e-03  1.371323e-02
## 1-1731      1.417431e-01  2.352057e-02  -2.243897e-02  7.189396e-02
## 1-1793      -2.177993e-02  -4.467102e-02  -1.102699e-02  1.584451e-02
## 1-1820      -2.394985e-02  5.079904e-02  -4.833208e-02  -1.292642e-02
## 1-1823      -1.717523e-02  6.769439e-03  5.469643e-03  1.371323e-02
## 1-1851      -2.803699e-02  6.457327e-02  3.073387e-02  1.244376e-02
## 1-1863      -1.966145e-02  4.426308e-02  2.594990e-02  -8.884576e-05
## 1-1903      -1.151987e-02  -1.567515e-02  1.856240e-02  -5.527428e-03
## 1-1928      -6.756801e-04  -2.751660e-02  4.931175e-02  -1.589088e-02
## 1-1928_2    -2.002619e-02  -7.872503e-03  1.118014e-02  -4.921513e-03
## 1-1936      1.395971e-01  2.299521e-02  -2.203508e-02  7.088916e-02
## 1-1955      2.312382e-02  9.095296e-03  4.857952e-03  -4.400533e-02
## 1-1983      6.474396e-03  -1.910226e-02  -5.897548e-02  -2.546161e-03
## 1-1995      -2.847407e-02  -2.494816e-02  -7.037368e-02  -2.042510e-02
## 1-2035      -1.650289e-02  5.717069e-03  2.029217e-02  1.066534e-02
## 1-2061      -9.413979e-03  2.616965e-02  3.034588e-02  -1.710298e-03
## 1-2085      2.593395e-02  -5.740350e-03  5.489773e-03  -2.406645e-02
## 1-2102      -1.153285e-02  -1.260917e-02  1.211466e-02  4.019441e-03
## 1-2115      -1.715329e-02  4.247607e-02  -3.316213e-02  -6.593447e-03
## 1-2131      -5.759555e-03  2.893600e-03  2.097856e-02  9.861136e-03
## 1-2191      -8.382734e-03  5.275730e-03  2.133942e-02  5.775818e-03
## 1-2228      -2.734327e-02  -2.510274e-02  -6.841690e-02  -2.028489e-02
## 1-2272      -1.730570e-02  -1.330530e-02  -4.497587e-02  -1.034612e-02
## 1-2293      2.268744e-03  1.216027e-02  5.235022e-03  -1.299627e-02
## 1-2315      3.566471e-02  5.691323e-03  -1.571080e-04  -2.651145e-03
## 1-2374      -2.734327e-02  -2.510274e-02  -6.841690e-02  -2.028489e-02
## 1-2402      -9.237214e-03  7.952813e-03  -8.940154e-03  4.975143e-03
## 1-2443      -7.857751e-03  4.727201e-03  1.834986e-02  5.660774e-03
## 1-2494      -9.134265e-03  2.426052e-02  2.805597e-02  -1.299739e-03
## 1-2524      -2.088811e-02  -4.876219e-03  5.827785e-03  -1.099443e-03
## 1-2573      5.740804e-01  9.942716e-02  -2.857382e-02  -1.074172e-01
## 1-2594      -9.882601e-03  -6.685992e-02  5.144945e-03  -2.626715e-03
## 1-2628      -6.491174e-02  -1.177507e-01  4.941008e-02  1.055450e-01
## 1-2664      -2.546715e-02  -2.596495e-02  3.838150e-02  6.611986e-03
## 1-2782      2.645347e-04  -9.024224e-03  9.143256e-03  -4.478772e-02
## 1-2833      2.645347e-04  -9.024224e-03  9.143256e-03  -4.478772e-02
## 1-2890      4.740874e-02  2.494269e-03  -7.501236e-03  2.035250e-02
## 1-2938      -2.517967e-02  1.714550e-02  5.622203e-02  2.956978e-02
## 1-2954      -7.968600e-03  -1.694944e-03  -3.574989e-02  -2.977522e-03
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## 1-3216      -1.190724e-02  3.009619e-02  -2.021421e-02  -9.507654e-03
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## 1-3308      -4.751898e-03  3.117793e-03  1.689306e-02  9.117213e-03
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## 1-3738	-4.663539e-03	-2.314591e-02	1.200487e-02	-1.015131e-01
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## 1-3837	-1.512940e-02	5.069271e-03	7.513309e-03	1.223564e-02
## 1-3883	-2.053130e-03	-3.629076e-02	-7.562336e-03	-2.634649e-03
## 1-3885	-2.836895e-02	4.155847e-02	4.430956e-02	1.281716e-02
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## 1-4270	-3.077645e-02	9.399833e-03	1.737540e-02	3.118901e-02
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## 1-4485	-3.235573e-02	-9.938525e-03	3.017752e-02	1.503002e-02
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## 1-4796	-2.238901e-03	-1.010764e-02	2.661652e-02	1.342111e-03
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## 1-5074	-2.026194e-02	-1.564301e-02	-4.737307e-02	-7.101649e-03
## 1-5087	5.433645e-02	2.096540e-02	3.302541e-03	-3.012190e-02
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## 1-5861      3.183050e-02  1.710471e-02 -6.521297e-03  3.179816e-02
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## 1-5896      -1.855330e-02 -1.153556e-02  4.115223e-02  1.482366e-02
## 1-5957      3.066006e-02  4.045849e-03  1.431883e-03 -8.815629e-03
## 1-6071      -6.093465e-03  1.225631e-02  1.921184e-02  2.663251e-04
## 1-6116      -1.116904e-02 -8.349891e-03  2.202166e-02 -3.962259e-02
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## 1-7048      -6.980434e-03 -1.636460e-02  2.886641e-02 -6.602952e-03
## 1-7072      -2.791749e-01 -3.128477e-01  5.216046e-02  2.724533e-02
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## 1-7117      -1.599352e-03 -3.704673e-02  4.213422e-02 -1.910535e-02
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## 1-7237      -6.980434e-03 -1.636460e-02  2.886641e-02 -6.602952e-03
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## 1-10535	7.532430e-03	-1.275659e-02	-4.820162e-03	-7.207038e-02
## 1-10541	2.488028e-02	1.610197e-03	2.898754e-03	-1.820523e-02
## 1-10573	-3.328648e-02	-2.044551e-02	-8.332236e-02	-2.201470e-02
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## 1-10719	-7.659594e-03	-4.451851e-02	7.067127e-03	2.460701e-02
## 1-10732	-1.908893e-02	4.384588e-02	2.807506e-02	1.048169e-04
## 1-10738	7.532430e-03	-1.275659e-02	-4.820162e-03	-7.207038e-02
## 1-10790	1.752388e-01	3.475162e-02	-2.514900e-02	9.930557e-02
## 1-10824	-1.486975e-02	7.328935e-03	4.663434e-03	1.338119e-02
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## 1-15808	-1.257073e-02	2.670382e-03	1.640482e-02	1.483539e-02
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## 1-18489 1.079996e-01 2.316837e-02 -1.445202e-02 5.975965e-02
## 1-18490 -1.718034e-02 3.566609e-02 -2.358203e-02 -5.812306e-03
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## 1-18560 -1.537737e-02 3.290020e-02 -2.018659e-02 -5.016824e-03
## 1-18597 -3.386078e-03 -3.494377e-03 -2.792077e-02 4.659690e-04
## 1-18615 2.114458e-03 -1.065963e-02 -4.414401e-02 -1.077425e-03
## 1-18623 -2.366661e-03 -2.731082e-02 -3.774379e-03 -7.124015e-04
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## 1-18665 -4.563751e-02 1.084019e-01 8.219033e-03 4.807632e-03
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## 1-18774 -4.990301e-03 -2.951515e-02 2.905721e-02 -7.935069e-03
## 1-18813 -1.115729e-02 -1.741757e-02 2.490895e-02 -1.258944e-03
## 1-18827 -1.433144e-02 3.468704e-02 5.032119e-02 -3.244221e-04
## 1-18862 -1.115602e-02 -1.741079e-03 1.368639e-02 7.632574e-03
## 1-18929 -1.850852e-02 -7.470875e-03 -5.343997e-02 -7.445670e-03

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## 1-18943 -1.115729e-02 -1.741757e-02 2.490895e-02 -1.258944e-03
## 1-19028 -2.788216e-03 -5.612348e-03 1.775972e-02 5.323729e-03
## 1-19057 -1.661696e-02 -5.738987e-03 2.494993e-02 1.682220e-02
## 1-19062 1.049532e-01 2.299554e-02 -4.175145e-03 -2.022590e-02
## 1-19081 -2.038705e-02 -1.617695e-02 -5.198477e-02 -1.440166e-02
## 1-19087 -2.100523e-02 -3.964166e-02 -1.114836e-02 1.755366e-02
## 1-19135 -1.429871e-02 -1.536118e-03 2.461629e-02 1.624710e-02
## 1-19143 -8.519088e-03 -3.967580e-03 -3.789121e-02 -3.624137e-03
## 1-19179 3.986699e-02 9.206608e-04 -6.495403e-03 1.579170e-02
## 1-19213 -5.807474e-02 -4.294323e-03 -6.867036e-02 7.245747e-03
## 1-19243 1.088404e-02 -9.345169e-03 -4.085402e-03 -1.873992e-02
## 1-19251 -1.316535e-02 -1.354211e-02 2.043478e-02 3.912392e-04
## 1-19347 -1.199710e-02 -1.358151e-02 2.050671e-02 -4.292781e-04
## 1-19412 -1.791078e-02 -3.369052e-02 -9.845774e-03 1.602256e-02
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## 1-19546 3.884076e-02 -1.124160e-02 6.622393e-03 -3.556461e-02
## 1-19590 -1.797153e-02 1.233069e-02 1.297560e-02 1.387484e-02
## 1-19617 -1.557106e-02 -2.709978e-02 -8.811321e-03 1.255742e-02
## 1-19702 -3.303570e-02 -7.826364e-03 2.928645e-02 2.918335e-02
## 1-19704 -8.760202e-03 -2.880870e-02 2.565954e-02 -1.035456e-02
## 1-19704_2 -3.746951e-03 1.086350e-02 -4.737291e-02 -3.564510e-03
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## 1-19864 3.381655e-02 1.032229e-02 -1.128135e-03 9.963778e-03
## 1-19898 -2.026540e-03 -3.165314e-02 -5.414814e-03 -2.589978e-03
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## 1-19985 -3.811310e-03 -2.646011e-02 2.619795e-02 -7.634827e-03
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## 1-20241 -6.190501e-03 1.049475e-02 2.118045e-02 7.648524e-03
## 1-20260 3.236031e-02 7.821196e-03 -1.117628e-03 1.049349e-02
## 1-20282 -2.565509e-02 6.171205e-02 -1.479897e-02 -1.691731e-03
## 1-20300 -2.771201e-02 2.546903e-03 1.136066e-02 1.832875e-02
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## 1-20733 1.960046e-03 -1.594847e-02 3.128709e-02 -1.210725e-02
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## 1-20872      -2.890031e-03 -3.440259e-02 -7.000152e-03 -3.039675e-03
## 1-20911      -3.983799e-02 -7.858320e-03 -9.757349e-02 -1.083504e-02
## 1-21038      -2.558336e-02  4.598975e-02  8.297552e-02  4.093337e-03
## 1-21041      -1.865848e-02  3.551683e-03  1.418812e-02  1.306254e-02
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## 1-21102      -2.152295e-02  2.585774e-03  4.684208e-03  1.561589e-02
## 1-21117      -1.470279e-02  1.061285e-02 -4.028327e-02 -5.021341e-03
## 1-21144      -1.822273e-02  4.328405e-02  2.389406e-02 -4.059446e-03
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## 1-21217      -1.519365e-02  3.852847e-02 -2.644298e-02 -6.578254e-03
## 1-21266      -1.884705e-02  7.757510e-02  7.546716e-02 -2.382425e-02
## 1-21437      2.741858e-02 -5.687834e-03 -1.774575e-03 -9.577476e-02
## 1-21492      -3.509045e-02 -3.091015e-02  2.795306e-02  1.055833e-02
## 1-21551      -1.726181e-02 -2.846753e-02 -9.999288e-03  1.264814e-02
## 1-21585      -2.375650e-02  2.725025e-03 -3.534454e-02  6.949495e-04
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## 1-21645      -5.310010e-03  5.494071e-03  2.269507e-02  9.508325e-03
## 1-21715      -1.779638e-02  4.242863e-02 -5.408477e-02 -1.211652e-02
## 1-21808      4.865511e-02  5.120651e-03 -6.359962e-03  2.081103e-02
## 1-21867      -1.036549e-02  1.324870e-02 -2.699412e-02 -4.636954e-03
## 1-21901      -1.969235e-02  2.193134e-02 -4.648003e-02 -7.636515e-03
## 1-21993      -5.115915e-01 -6.216656e-02  4.191655e-02 -1.740039e-02
## 1-21995      -1.488716e-02  3.728376e-03  1.176251e-02  1.490957e-02
## 1-22012      2.661463e-02  1.140798e-02  6.063686e-03 -5.543741e-02
## 1-22015      -2.134626e-02 -3.417347e-02 -1.347369e-02  1.385947e-02
## 1-22022      -8.978996e-03 -2.520605e-02  2.732682e-02 -2.044077e-02
## 1-22118      -1.429298e-03 -4.770289e-03  1.074064e-03 -1.793460e-02
## 1-22145      -2.206299e-02  4.973554e-02 -1.184651e-01 -1.401642e-02
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## 1-22217      -7.396026e-03  1.661479e-02 -4.114888e-02 -4.840522e-03
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## 1-22406      -2.717053e-02 -7.819441e-03 -6.985885e-02 -1.008432e-02
## 1-22434      3.562928e-02  9.185271e-03 -1.273481e-03  1.320147e-02
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## 1-22493      -3.030202e-02  6.963082e-02  3.193745e-02  1.200472e-02
## 1-22494      1.832137e-02  4.490796e-04 -6.867978e-04 -7.493548e-02
## 1-22696      -4.715689e-02 -3.601252e-02  3.263834e-02  1.446407e-02
## 1-22760      -1.088209e-02  2.321060e-02 -5.785830e-02 -8.900765e-03
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## 1-22803      2.912540e-02  1.519985e-02 -6.982381e-03  2.554012e-02
## 1-22842      -3.850902e-02  9.813723e-04 -9.772834e-02 -1.332321e-02
## 1-22902      -3.611752e-02 -4.156755e-02  4.706558e-02 -2.160494e-02
## 1-22916      2.912540e-02  1.519985e-02 -6.982381e-03  2.554012e-02
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## 1-22964      -4.659005e-03  3.307745e-03 -4.524184e-02 -3.522604e-04
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## 1-23021      5.773830e-03 -2.229338e-02  3.495601e-02 -1.831178e-02
## 1-23053      2.608696e-02  1.197720e-02  5.755378e-03 -5.807475e-02
## 1-23081      -4.659005e-03  3.307745e-03 -4.524184e-02 -3.522604e-04
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## 1-23236 -8.361394e-03 2.400687e-02 -1.830743e-02 -1.491949e-02
## 1-23278 -1.743254e-02 -2.703865e-02 3.102261e-02 -2.192955e-02
## 1-23285 -3.506659e-02 -7.340214e-03 3.093396e-02 3.231822e-02
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## 1-23551 -1.131466e-02 -3.009657e-02 3.245491e-02 -2.195441e-02
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## 1-23848 -4.036940e-03 -3.289890e-02 -7.460577e-03 5.887560e-05
## 1-23870 -2.181104e-02 1.508804e-02 1.794410e-02 2.046572e-02
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## 1-23884 2.717355e-02 5.449856e-03 -2.661832e-03 -8.207591e-03
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## 1-23971 -8.515029e-03 -3.615476e-03 3.144349e-02 1.500877e-02
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## 1-24141 4.676868e-03 -4.905199e-03 -2.617787e-03 -3.038436e-02
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## 1-24379 -3.509318e-03 2.204110e-03 1.648864e-02 9.608875e-03
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## 1-24576 5.593404e-03 2.502983e-02 2.117500e-02 -1.405436e-02
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## 1-24623 -2.215545e-02 1.500304e-02 1.722827e-02 2.003342e-02
## 1-24630 -2.282031e-02 -2.133663e-02 1.204973e-02 6.736436e-03
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## 1-24964 -2.933415e-02 5.033394e-02 6.222632e-02 7.551631e-03
## 1-24967 -8.037122e-03 -9.266599e-02 1.474568e-02 4.975940e-02
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## 1-25269 -7.303684e-03 -1.773614e-02 1.712429e-02 -3.442702e-03
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## 1-25729 4.424484e-02 -1.446763e-02 4.139214e-03 -3.847556e-02
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## 1-26219 -2.341407e-02 3.838312e-02 4.148431e-02 9.034392e-03
## 1-26291 -6.571730e-03 -1.810548e-02 1.758068e-02 -3.664436e-03
## 1-26337 -1.216640e-02 2.197400e-02 3.799496e-02 -1.895133e-04
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## 1-26383 2.734307e-02 1.179181e-02 6.681294e-03 -5.841631e-02
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## 1-27332 -7.887552e-03 -5.374850e-03 -3.313947e-02 -1.679659e-03
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## 1-27538      5.159988e-02  1.188337e-02 -3.402507e-03  2.488718e-02
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## 1-27612      1.342019e-02  -1.173567e-02 -2.309968e-02  4.120598e-03
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## 1-27732      -2.294611e-02  -1.009424e-02  2.032191e-02  2.042941e-02
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## 1-27849      -3.568087e-02  -4.740925e-02 -2.692946e-02  2.426230e-02
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## 1-28187      -1.641960e-02  -1.775553e-02 -1.443638e-02  1.168306e-02
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## 1-29867     -7.899574e-03 -2.434954e-02  3.153340e-02 -2.406073e-02
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## 1-29920     -2.311847e-02 -8.379660e-03 -6.411439e-02 -8.490753e-03
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## 1-29997     -6.165099e-03  1.245774e-02 -3.254051e-02 -1.686453e-03
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## 1-33302 -1.994592e-02 4.556822e-02 2.733710e-02 -5.704904e-04
## 1-33337 -2.324875e-02 -3.649538e-02 8.547317e-02 -8.026096e-03
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## 1-33615 5.943007e-02 5.725629e-03 -1.032350e-02 2.872794e-02
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## 1-33728 -2.316637e-02 5.187420e-02 2.455840e-02 9.329794e-03
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## 1-35132	-1.639515e-02	-6.972556e-03	2.434249e-03	-6.753168e-03
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## 1-35368	-1.983378e-02	4.463299e-02	2.615928e-02	-3.069411e-04
## 1-35410	-1.190286e-02	5.474392e-03	1.643089e-02	1.298967e-02
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## 1-35538	-2.014005e-03	3.254046e-03	-3.464835e-02	-3.077990e-03
## 1-35560	1.809963e-02	-1.133482e-02	-1.967742e-02	2.663165e-03
## 1-35586	-4.766102e-02	-1.796214e-02	-1.083653e-01	-1.247714e-02
## 1-35607	-1.950036e-02	2.701194e-02	3.400091e-02	7.860001e-03
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## 1-35663	-3.313127e-03	2.414919e-03	-2.568178e-02	-1.775144e-03
## 1-35792	-1.629491e-04	5.711096e-03	-2.109629e-02	-2.015630e-03
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## 1-35996	-1.037745e-02	-3.260937e-02	-2.756622e-02	-4.262982e-03
## 1-36122	-2.147772e-02	-1.010797e-02	-6.174010e-02	-9.253909e-03
## 1-36131	-1.583022e-02	-5.382682e-03	2.323044e-03	6.730973e-03
## 1-36133	-5.901291e-03	-6.133009e-02	9.743698e-03	3.278178e-02
## 1-36237	1.601707e-01	8.326389e-02	-1.672985e-03	-1.249140e-01
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## 1-36383	-2.507624e-01	-2.393828e-01	3.813689e-02	1.232658e-01
## 1-36392	2.647035e-02	1.480566e-02	-7.110644e-03	2.302163e-02
## 1-36428	3.427725e-02	4.563849e-02	-3.638452e-02	1.543248e-02
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## 1-36507	-1.282593e-02	-1.132091e-02	1.590656e-02	7.404939e-03
## 1-36525	2.952117e-02	1.489426e-02	7.221729e-03	-8.097888e-02
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## 1-36586	-5.901291e-03	-6.133009e-02	9.743698e-03	3.278178e-02
## 1-36599	-6.895737e-03	-3.031456e-02	6.309961e-04	6.730300e-03
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## 1-36822	5.026128e-02	2.035356e-02	-8.970788e-03	2.431012e-02
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## 1-36884	-1.942041e-02	-2.864239e-02	-1.219685e-02	1.495426e-02
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## 2-56616	3.043940e-02	-2.184312e-02	6.107103e-03	-2.729086e-02
## 2-56631	-3.730585e-03	1.448981e-03	1.833864e-02	5.329530e-03
## 2-56632	-1.448000e-02	-1.341756e-02	1.369628e-02	1.065189e-02
## 2-56649	-1.116120e-02	2.649681e-02	-1.902822e-02	-6.704150e-03
## 2-56669	-2.063451e-02	-1.312160e-02	1.202516e-02	1.407193e-02
## 2-56684	-9.841636e-03	2.319958e-02	-1.953109e-02	-3.910229e-03
## 2-56715	3.095351e-02	1.322696e-02	1.195468e-03	-4.242081e-02
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## 2-56865	7.878168e-03	-1.132060e-02	2.519162e-02	-1.337526e-02
## 2-56911	-1.710679e-02	-9.310448e-03	3.184632e-02	1.632523e-02
## 2-56937	-1.986094e-02	-1.283462e-02	2.765399e-02	-3.409626e-02
## 2-56940	-8.441600e-03	-1.694087e-02	2.023212e-02	-1.065547e-02
## 2-56942	-1.358349e-02	2.005369e-02	4.162731e-02	7.861599e-03
## 2-56959	-1.223565e-02	-5.302589e-02	1.912905e-03	1.968260e-02
## 2-56984	7.525314e-02	2.858190e-02	-1.076606e-02	6.082909e-02
## 2-56988	1.983684e-02	1.271686e-02	-8.827594e-03	8.058695e-03
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## 2-57067	-1.818377e-02	2.780294e-02	4.831451e-02	9.225180e-03
## 2-57070	-3.730585e-03	1.448981e-03	1.833864e-02	5.329530e-03
## 2-57096	3.362984e-02	1.448914e-02	1.672648e-03	-5.247551e-02
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## 2-57560	-2.291548e-02	1.117212e-02	-7.676011e-04	1.432059e-02
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## 2-57624	1.755097e-02	-2.653979e-02	-1.958814e-02	-5.649775e-02
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## 2-58929	3.881591e-02	8.632804e-03	-2.826454e-03	1.203080e-02
## 2-58931	-2.300492e-02	-7.571833e-03	-4.960577e-02	-4.766373e-03

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## 2-62070	1.958214e-02	9.149016e-03	4.620767e-03	-4.676412e-02
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## 2-64048	-3.257990e-03	-3.999828e-02	1.400757e-03	-2.731346e-03
## 2-64065	-6.271269e-03	-2.748879e-02	3.012903e-02	9.331938e-04
## 2-64093	-3.036959e-02	-2.302350e-02	-7.554438e-02	-1.923339e-02
## 2-64097	1.772797e-01	-2.270018e-01	-1.217512e-01	6.854289e-02
## 2-64102	-8.789418e-03	1.069940e-02	2.548177e-02	4.302448e-03
## 2-64113	3.736967e-02	1.561615e-02	7.585664e-03	-7.389070e-02
## 2-64136	-5.873743e-03	-4.401456e-03	1.598969e-02	7.602695e-03
## 2-64243	-1.691700e-02	-7.810990e-03	-3.616688e-02	-1.644361e-03
## 2-64268	-2.429495e-02	8.887561e-03	4.771035e-02	3.198556e-02
## 2-64474	1.460054e-01	3.477609e-02	-1.922672e-02	9.045116e-02
## 2-64480	-6.756141e-03	-2.368327e-02	2.824034e-02	-1.148556e-02
## 2-64495	-8.228071e-03	-8.771767e-04	-2.344877e-02	4.861037e-04
## 2-64654	1.250584e-02	-8.978004e-03	-2.094008e-02	2.331234e-03
## 2-64659	3.964494e-02	-1.823418e-02	-1.315557e-02	-7.667209e-02
## 2-64676	-2.834882e-02	-1.125930e-02	-7.907094e-02	-1.192383e-02
## 2-64706	1.069958e-01	3.111087e-02	-1.096174e-02	4.914704e-02
## 2-64712	-1.113295e-02	2.869707e-02	-2.115836e-02	-8.978283e-03
## 2-64769	-2.860788e-02	6.623549e-02	3.018993e-02	1.152239e-02
## 2-64868	-2.415677e-02	-8.117625e-03	1.883842e-02	2.595113e-02
## 2-64996	-2.021881e-02	5.179586e-02	-4.608235e-02	-9.739354e-03
## 2-65038	3.952497e-02	8.159690e-03	-2.942827e-03	7.875718e-03
## 2-65165	-1.435017e-02	3.208975e-02	-5.287626e-02	-6.148489e-03
## 2-65196	1.777385e-02	1.002766e-02	3.827137e-03	-4.807692e-02
## 2-65389	-2.481034e-03	-2.175798e-02	2.747117e-02	-5.113709e-03
## 2-65419	-1.368812e-01	-8.624179e-02	1.558886e-01	1.662462e-02
## 2-65554	-8.972611e-03	-1.047440e-01	1.614712e-02	5.642028e-02
## 2-65595	-1.140006e-02	-4.071667e-03	2.204163e-02	1.282111e-02
## 2-65655	-1.155657e-02	-3.261664e-02	-4.059582e-03	1.027600e-02

## 2-65669	9.224281e-02	2.560644e-02	-1.318025e-02	5.965175e-02
## 2-65759	6.521331e-02	1.793105e-02	-5.484652e-03	3.644476e-02
## 2-65820	4.696295e-03	-1.804585e-02	-4.571853e-02	-1.642091e-03
## 2-65822	-3.415355e-02	-2.230937e-02	-8.245049e-02	-1.791212e-02
## 2-65830	1.461854e-02	-1.614271e-02	1.626276e-03	-3.419737e-02
## 2-65843	4.353852e-03	-4.511594e-02	2.539932e-02	-3.187652e-02
## 2-65851	-5.689704e-03	-3.044749e-02	-1.580747e-03	2.785374e-03
## 2-65891	-5.106154e-02	-4.302203e-02	5.877218e-02	-6.315134e-03
## 2-65903	6.288986e-02	-1.738512e-02	1.266635e-02	-1.498518e-01
## 2-65924	6.989178e-02	1.872113e-02	-5.848329e-03	3.846110e-02
## 2-65941	1.272690e-02	-1.820576e-02	-1.636375e-02	-1.514164e-02
## 2-66043	1.461854e-02	-1.614271e-02	1.626276e-03	-3.419737e-02
## 2-66051	-1.186052e-02	1.856527e-02	3.894437e-02	1.408850e-02
## 2-66080	-8.584096e-03	2.622601e-02	4.226371e-02	-7.321940e-03
## 2-66220	2.343722e-01	3.590745e-02	-3.062574e-02	1.076830e-01
## 2-66240	-3.582981e-03	-1.831889e-03	2.035756e-02	5.665679e-03
## 2-66365	6.297724e-03	1.409444e-02	-1.844948e-03	-2.262400e-02
## 2-66382	2.199571e-02	-5.435384e-03	-8.293422e-04	-7.939947e-03
## 2-66461	2.099756e-01	2.282525e-02	-2.622120e-02	8.234915e-02
## 2-66506	3.809234e-02	8.478322e-03	-2.552791e-03	7.424799e-03
## 2-66605	3.809234e-02	8.478322e-03	-2.552791e-03	7.424799e-03
## 2-66610	-2.689553e-02	6.374821e-02	4.069616e-02	-1.089052e-03
## 2-66656	-1.853908e-02	-7.634723e-03	-5.359346e-02	-8.319602e-03
## 2-66669	1.461854e-02	-1.614271e-02	1.626276e-03	-3.419737e-02
## 2-66675	-6.728465e-03	-4.565081e-02	-4.470349e-03	4.356859e-04
## 2-66693	9.173814e-03	1.076346e-02	2.982721e-03	-1.618817e-02
## 2-66816	-1.417139e-02	2.883354e-02	-4.496315e-02	-6.324032e-03
## 2-66870	-2.689553e-02	6.374821e-02	4.069616e-02	-1.089052e-03
## 2-66914	-2.035242e-02	-1.567420e-02	1.509569e-02	6.481828e-03
## 2-66919	-5.221919e-03	-3.386832e-02	-5.856266e-03	-5.054506e-04
## 2-66979	6.892072e-02	2.925333e-02	-9.911220e-03	4.552490e-02
## 2-67048	-8.221529e-03	-6.313435e-03	1.402937e-02	-1.210461e-02
## 2-67078	-2.034610e-02	3.653383e-02	-8.040682e-02	-8.373828e-03
## 2-67143	-2.415677e-02	-8.117625e-03	1.883842e-02	2.595113e-02
## 2-67306	-2.415677e-02	-8.117625e-03	1.883842e-02	2.595113e-02
## 2-67319	1.120033e-01	-3.587385e-03	-2.479756e-02	2.983132e-02
## 2-67358	5.870284e-02	4.193143e-03	-8.813862e-03	2.573561e-02
## 2-67367	-1.257740e-02	-1.445963e-02	1.334722e-02	2.598581e-03
## 2-67399	2.670479e-02	6.209697e-03	-3.645687e-03	9.571797e-03
## 2-67431	-5.151288e-03	-3.478804e-02	6.136594e-04	5.476280e-04
## 2-67460	-1.940268e-02	4.927952e-02	5.979665e-02	-1.981634e-03
## 2-67496	-5.620454e-03	5.679644e-03	2.991332e-02	9.522306e-03
## 2-67500	-2.845600e-02	5.610739e-02	-9.175578e-02	-1.218165e-02
## 2-67544	-2.056134e-02	4.628156e-02	2.552766e-02	-1.020259e-03
## 2-67602	4.068449e-02	1.307155e-02	-4.287784e-03	2.623238e-02
## 2-67607	-1.726396e-02	2.712259e-02	-8.313696e-02	-7.592973e-03
## 2-67627	3.049539e-02	-8.024773e-03	4.304805e-03	-6.128905e-02
## 2-67630	-8.089111e-03	1.024194e-02	3.016020e-02	9.145110e-03
## 2-67661	-3.873185e-02	-2.206604e-02	-8.686239e-02	-1.946475e-02
## 2-67662	-7.679832e-03	9.901060e-03	2.857322e-02	8.862228e-03
## 2-67665	-1.548293e-02	-2.089847e-02	3.328097e-02	-3.846481e-02
## 2-67667	-1.245107e-02	-9.811637e-02	1.558601e-02	5.458387e-02
## 2-67795	-2.056134e-02	4.628156e-02	2.552766e-02	-1.020259e-03
## 2-67821	3.126463e-02	-5.247502e-03	1.141501e-05	-5.772819e-02

## 2-67824	-3.671424e-02	7.248437e-04	6.271040e-03	2.316967e-02
## 2-67857	-3.035682e-02	6.080836e-02	-1.207899e-01	-1.345755e-02
## 2-67956	-3.925710e-03	1.969177e-02	3.484028e-02	-1.187203e-02
## 2-67971	4.443156e-02	3.085140e-03	4.651428e-03	-2.362142e-02
## 2-68004	-2.236703e-02	-1.777353e-02	3.173105e-02	1.219240e-02
## 2-68034	-5.262679e-03	8.822584e-03	2.315063e-02	1.060772e-02
## 2-68062	-2.056134e-02	4.628156e-02	2.552766e-02	-1.020259e-03
## 2-68076	2.051423e-02	1.765834e-02	-2.893145e-02	3.418956e-02
## 2-68089	-2.164730e-02	-2.255091e-03	2.037021e-02	3.750109e-03
## 2-68099	7.819775e-02	3.831960e-02	-1.310348e-02	7.627042e-02
## 2-68109	-1.245107e-02	-9.811637e-02	1.558601e-02	5.458387e-02
## 2-68136	-1.078379e-02	-1.867748e-03	1.553749e-02	8.972636e-03
## 2-68143	-9.808559e-03	3.079846e-02	3.384396e-02	-2.659959e-03
## 2-68180	-2.803699e-02	6.457327e-02	3.073387e-02	1.244376e-02
## 2-68181	-6.426203e-03	9.845106e-06	4.606302e-04	-1.008047e-02
## 2-68266	6.333955e-03	-1.794938e-02	-3.721794e-02	-1.985060e-03
## 2-68271	-2.803699e-02	6.457327e-02	3.073387e-02	1.244376e-02
## 2-68276	-6.598886e-04	1.497045e-03	-4.387395e-02	-6.692530e-03
## 2-68303	-2.202120e-02	6.613400e-03	-3.074762e-02	6.172658e-03
## 2-68312	-3.305861e-03	-3.962179e-02	-5.759062e-03	-2.110872e-03
## 2-68317	3.774490e-02	9.849061e-03	-2.770173e-03	2.246410e-02
## 2-68348	1.330643e-02	-1.689012e-02	1.444630e-03	-3.808722e-02
## 2-68375	2.984022e-02	-5.797567e-03	-2.263637e-03	-4.896254e-02
## 2-68389	1.701111e-02	2.937724e-02	-3.492926e-03	-4.226145e-02
## 2-68413	-2.803699e-02	6.457327e-02	3.073387e-02	1.244376e-02
## 2-68431	-2.056134e-02	4.628156e-02	2.552766e-02	-1.020259e-03
## 2-68453	-6.894802e-03	2.419409e-02	2.273872e-02	-1.919704e-03
## 2-68566	6.194034e-02	1.194920e-02	-8.226011e-03	3.094727e-02
## 2-68686	-9.288399e-03	4.706125e-03	-2.798036e-02	-3.448393e-03
## 2-68711	-1.687323e-02	-5.986054e-03	-4.777766e-02	-6.987731e-03
## 2-68727	-2.803699e-02	6.457327e-02	3.073387e-02	1.244376e-02
## 2-68830	-1.418906e-01	-4.676901e-02	1.267804e-01	3.215101e-02
## 2-68873	-2.803699e-02	6.457327e-02	3.073387e-02	1.244376e-02
## 2-68889	-5.969413e-03	-9.910062e-03	2.009599e-02	6.757998e-03
## 2-68925	-2.803699e-02	6.457327e-02	3.073387e-02	1.244376e-02
## 2-68939	8.546313e-02	4.119647e-02	1.919251e-01	2.975189e-02
## 2-68977	-8.285381e-03	-2.612709e-02	2.759195e-02	-3.666474e-03
## 2-68978	-5.413637e-03	-2.667852e-02	-1.779194e-03	1.709899e-03
## 2-69003	-8.421373e-03	8.603847e-03	2.875344e-02	1.295196e-02
## 2-69049	-8.191411e-03	-2.400163e-02	2.534658e-02	-2.396013e-03
## 2-69077	-4.321919e-02	9.922064e-02	-6.551803e-02	-1.823509e-02
## 2-69083	3.067666e-02	-8.085525e-03	-2.026705e-03	-4.582499e-02
## 2-69084	5.145771e-02	1.411776e-02	-5.539048e-03	3.114880e-02
## 2-69089	-4.586664e-02	2.791458e-04	6.684554e-03	2.643401e-02
## 2-69128	-1.390778e-02	2.457583e-02	4.270613e-02	1.101414e-04
## 2-69157	9.552659e-03	2.357825e-02	-5.089343e-03	-2.922488e-02
## 2-69238	-2.056134e-02	4.628156e-02	2.552766e-02	-1.020259e-03
## 2-69256	8.088287e-02	1.517582e-02	-1.047051e-02	4.065029e-02
## 2-69270	-2.473816e-02	5.724572e-02	-4.712276e-02	-1.258582e-02
## 2-69278	-2.056134e-02	4.628156e-02	2.552766e-02	-1.020259e-03
## 2-69318	-2.803699e-02	6.457327e-02	3.073387e-02	1.244376e-02
## 2-69388	-1.078775e-02	-2.309743e-02	3.930288e-02	-2.220987e-02
## 2-69419	-2.203137e-02	1.480142e-02	-2.589659e-02	4.323642e-03
## 2-69464	1.605114e-02	1.101125e-02	2.097700e-03	-4.824947e-02

## 2-69597	-2.803699e-02	6.457327e-02	3.073387e-02	1.244376e-02
## 2-69605	3.922105e-02	2.170873e-02	7.768597e-03	-9.767114e-02
## 2-69679	-9.521889e-03	-8.059483e-03	8.122191e-03	-6.402967e-03
## 2-69744	1.010874e-01	1.702140e-02	-1.330385e-02	5.053158e-02
## 2-69762	-2.150416e-02	1.677059e-02	-4.388722e-02	-4.887837e-03
## 2-69795	-1.087349e-02	2.082809e-02	3.095306e-02	1.278415e-03
## 2-69943	-1.515103e-02	3.717673e-02	-1.912926e-02	-7.197117e-03
## 2-70000	-1.471401e-02	-1.356094e-02	-4.054751e-02	-1.559080e-02
## 2-70007	-8.813341e-03	-8.193962e-03	1.815812e-02	-1.570951e-02
## 2-70056	1.958941e-02	-3.332575e-03	6.227413e-03	-1.153176e-02
## 2-70057	4.378827e-03	-6.431003e-03	-3.525835e-02	-2.670201e-03
## 2-70065	-2.834882e-02	-1.125930e-02	-7.907094e-02	-1.192383e-02
## 2-70173	3.209143e-01	4.030304e-01	2.526459e-02	-7.865355e-02
## 2-70177	-1.005278e-02	9.344522e-03	2.994061e-02	1.606348e-02
## 2-70191	-1.264330e-02	1.902394e-02	3.960637e-02	3.740257e-03
## 2-70194	1.933433e-01	6.521544e-02	-2.349302e-02	1.329787e-01
## 2-70199	9.963567e-03	2.437030e-02	-4.610793e-03	-3.683554e-02
## 2-70284	-1.556129e-02	-1.029840e-03	2.187957e-03	-1.790273e-03
## 2-70328	-1.080504e-02	1.143375e-02	-1.852973e-02	4.380498e-03
## 2-70387	-1.480921e-02	-3.727530e-02	3.595677e-02	-6.240372e-03
## 2-70394	2.890484e-01	3.699658e-01	4.823630e-02	-7.381115e-02
## 2-70446	3.283159e-02	2.861788e-02	-2.965242e-03	-3.429023e-02
## 2-70476	-2.458437e-01	3.145143e-01	3.921098e-02	1.721631e-02
## 2-70487	-2.051443e-02	-1.040788e-02	2.497447e-02	-2.469863e-02
## 2-70508	6.737347e-02	9.381853e-03	2.332887e-03	-1.057043e-02
## 2-70516	4.115202e-02	2.509719e-02	9.196469e-03	-1.037206e-01
## 2-70541	-8.604792e-03	1.618870e-03	-2.959530e-02	-3.994134e-03
## 2-70578	-1.077304e-02	2.556416e-02	-2.148882e-02	-5.141186e-03
## 2-70697	-2.803699e-02	6.457327e-02	3.073387e-02	1.244376e-02
## 2-70742	-2.091577e-02	-1.063196e-02	2.525117e-02	-2.448217e-02
## 2-70751	-1.838614e-02	-2.047700e-02	-1.591004e-02	1.218632e-02
## 2-70790	-7.345279e-03	1.192822e-02	1.505132e-02	-8.707360e-04
## 2-70797	-2.053523e-02	-2.621807e-02	-1.735617e-02	1.374364e-02
## 2-70818	7.670811e-03	3.147960e-02	5.766708e-03	-3.016817e-03
## 2-70827	-3.093842e-02	-1.914700e-02	1.748240e-02	-7.458098e-03
## 2-70853	2.379124e-02	-4.806562e-03	-1.177364e-03	-4.791413e-02
## 2-70878	-3.600854e-02	8.087133e-02	-1.294824e-01	-1.299124e-02
## 2-70954	-7.982467e-03	-2.978428e-02	-3.792948e-03	4.888772e-03
## 2-71073	-2.199024e-02	-8.971969e-03	-4.576013e-02	-5.108568e-03
## 2-71145	-1.361059e-02	-3.096501e-02	2.983448e-02	-3.514675e-03
## 2-71185	-9.228404e-02	-4.361113e-02	-2.024221e-01	-2.959564e-02
## 2-71233	-3.578801e-02	3.324135e-02	9.124651e-02	1.612232e-02
## 2-71241	-1.911522e-02	9.363702e-04	9.385894e-04	-3.427229e-03
## 2-71271	-8.751478e-03	2.788930e-02	3.190944e-02	-2.472824e-03
## 2-71287	5.134125e-01	1.152128e-01	-2.352277e-02	4.480676e-02
## 2-71368	-1.446148e-03	-3.110181e-02	-1.709583e-03	-4.037241e-03
## 2-71439	-1.248276e-02	-2.810069e-03	-1.626919e-03	6.257066e-03
## 2-71450	1.448393e-02	3.524313e-03	1.839443e-03	-3.385129e-02
## 2-71508	-2.988192e-02	6.825850e-02	3.245473e-02	1.301554e-02
## 2-71510	1.416934e-02	9.841087e-03	4.407992e-03	-4.085933e-02
## 2-71514	-1.075074e-02	1.792955e-02	2.150789e-02	1.755076e-03
## 2-71530	1.800438e-03	1.958408e-02	-2.679734e-02	-8.903458e-05
## 2-71531	-1.755761e-02	-9.479746e-03	3.483255e-02	1.694200e-02
## 2-71561	-1.379871e-02	-1.403291e-03	-5.412200e-02	-1.818288e-03

## 2-71606	3.061036e-01	-6.227141e-02	-1.262777e-01	-4.022789e-02
## 2-71653	-1.412445e-02	7.520314e-03	1.449380e-02	1.499564e-02
## 2-71707	-1.393623e-02	3.533446e-02	-2.613885e-02	-7.227093e-03
## 2-71742	1.344394e-01	2.325258e-02	-1.770685e-02	7.050102e-02
## 2-71846	1.992977e-02	-1.662828e-02	9.265416e-04	-3.153226e-02
## 2-71873	7.334497e-02	1.373245e-02	-9.700468e-03	3.777102e-02
## 2-71900	-1.141504e-02	2.181689e-02	3.302367e-02	2.281276e-03
## 2-71902	-5.185014e-02	2.082625e-04	3.485901e-03	3.159609e-02
## 2-71958	3.691537e-02	9.412007e-03	-2.862857e-03	1.955242e-02
## 2-72042	-8.235745e-03	1.734046e-02	2.968981e-02	-2.103654e-04
## 2-72170	-2.988192e-02	6.825850e-02	3.245473e-02	1.301554e-02
## 2-72196	1.808861e-01	5.013697e-02	-4.042011e-02	9.300970e-02
## 2-72325	-2.631780e-03	-7.075182e-02	1.051517e-02	3.429793e-02
## 2-72359	-3.060632e-02	-8.176754e-03	2.683363e-02	2.965760e-02
## 2-72374	-1.313907e-02	3.311227e-02	-2.019328e-02	-5.618407e-03
## 2-72382	4.364239e-02	1.818041e-02	-5.248138e-03	3.898196e-02
## 2-72463	3.523894e-02	9.169014e-03	-2.756401e-03	1.883723e-02
## 2-72471	-3.403572e-02	-3.120220e-03	6.064066e-02	-7.486431e-03
## 2-72524	-8.035450e-03	1.044689e-02	2.493886e-02	1.342455e-02
## 2-72601	-7.284041e-03	-2.977132e-02	-6.436576e-04	5.093301e-03
## 2-72628	4.982614e-01	3.173167e-02	2.050460e-03	-8.513587e-02
## 2-72656	2.691310e-02	-3.090120e-03	2.559643e-03	-3.930675e-02
## 2-72700	5.410982e-02	6.970423e-03	-8.584726e-03	2.836540e-02
## 2-72717	5.160015e-03	-1.035137e-02	7.362573e-04	-3.363570e-02
## 2-72728	-2.269191e-03	-7.326369e-02	1.198183e-02	3.480734e-02
## 2-72755	-4.943991e-04	-3.216844e-02	-4.639371e-03	-7.094244e-03
## 2-72762	3.722298e-02	5.471413e-03	-6.022073e-03	2.011127e-02
## 2-72863	-1.620026e-02	9.384624e-03	1.171101e-02	1.593872e-02
## 2-72907	-5.584922e-02	-1.456968e-02	4.723866e-02	5.336927e-03
## 2-72926	-1.403367e-02	3.134212e-02	-2.816225e-02	-6.052177e-03
## 2-72926_2	3.373209e-02	8.969145e-03	-2.753334e-03	1.860119e-02
## 2-72939	-8.035450e-03	1.044689e-02	2.493886e-02	1.342455e-02
## 2-72954	-1.787732e-03	-7.022275e-03	1.064640e-02	1.410741e-02
## 2-72993	-1.872849e-02	4.215013e-02	5.402356e-02	5.785865e-03
## 2-72997	4.305566e-02	1.725140e-02	-7.561834e-03	2.958007e-02
## 2-72999	-1.988574e-02	4.746411e-02	-3.373037e-02	-8.916895e-03
## 2-73114	-1.886717e-02	-4.273171e-03	1.015927e-02	-6.376145e-03
## 2-73159	6.566039e-03	-9.325209e-03	-8.834149e-04	-3.220840e-02
## 2-73161	1.334731e-02	-1.680461e-02	1.055609e-03	-3.910105e-02
## 2-73179	-7.040483e-03	1.090087e-02	2.224690e-02	5.814060e-03
## 2-73222	-3.885178e-02	-1.432188e-02	-8.016143e-02	-7.969953e-03
## 2-73262	-2.973253e-02	-1.410683e-02	3.518367e-02	2.990165e-02
## 2-73262_2	1.594767e-02	-7.422338e-04	5.553655e-04	-2.560358e-02
## 2-73276	-1.156781e-02	-8.518569e-03	2.838800e-02	1.187752e-02
## 2-73289	1.956224e-01	3.338499e-01	1.744394e-01	-6.516823e-02
## 2-73373	-2.001982e-02	-1.326726e-02	-4.775865e-02	-8.410531e-03
## 2-73386	-2.790496e-02	-8.890566e-03	2.328667e-02	2.918642e-02
## 2-73406	2.944750e-02	-1.002770e-02	2.950105e-03	-3.440682e-02
## 2-73509	-2.915678e-02	-1.199190e-02	-7.971180e-02	-1.111202e-02
## 2-73553	1.214168e-02	5.429644e-03	6.679919e-03	-3.535883e-02
## 2-73582	-1.487878e-02	1.488302e-03	-3.139209e-02	6.469977e-03
## 2-73590	-1.136037e-02	2.411573e-02	3.845532e-02	-9.848951e-04
## 2-73606	-1.487878e-02	1.488302e-03	-3.139209e-02	6.469977e-03
## 2-73623	1.462392e-02	-1.636263e-02	1.403926e-03	-4.120324e-02

## 2-73648	-1.886609e-02	-8.530046e-03	1.746934e-02	-2.337425e-02
## 2-73707	4.480830e-03	-1.722672e-02	1.117636e-02	-4.822255e-02
## 2-73742	-1.393129e-02	2.471297e-02	-8.289167e-02	-6.014443e-03
## 2-73748	-1.144281e-02	1.243210e-03	-1.453820e-02	6.335256e-03
## 2-73805	-2.194015e-02	5.118464e-02	6.213549e-02	4.377272e-03
## 2-73826	8.936386e-03	4.017398e-03	1.156103e-02	-1.299560e-02
## 2-73827	4.391754e-02	7.618644e-03	8.510394e-03	-3.189832e-02
## 2-73856	1.251484e-02	7.860381e-03	2.653839e-03	-3.659173e-02
## 2-73883	-1.188311e-02	1.885651e-02	-7.002931e-03	-6.350995e-04
## 2-73913	1.204862e-02	2.782589e-02	-2.790240e-03	-3.647153e-02
## 2-73951	1.623159e-02	-1.865940e-02	4.542236e-04	-5.079034e-02
## 2-74021	-2.089756e-02	3.219625e-02	-1.829218e-02	-3.001395e-03
## 2-74072	-5.760289e-03	-2.066801e-02	1.907342e-02	-4.257071e-03
## 2-74112	1.800668e-03	4.442221e-02	-4.438888e-02	-2.514903e-03
## 2-74143	-1.670181e-02	-7.010023e-03	1.348327e-02	-1.658424e-02
## 2-74188	-1.254941e-02	1.996726e-02	-1.907964e-02	-6.603565e-03
## 2-74214	-2.168281e-02	1.182261e-02	1.893640e-02	2.177536e-02
## 2-74272	-3.773924e-02	-9.725055e-03	3.097131e-02	3.442325e-02
## 2-74276	4.031917e-02	8.021508e-03	8.094192e-03	-2.907412e-02
## 2-74322	8.936386e-03	4.017398e-03	1.156103e-02	-1.299560e-02
## 2-74330	-4.187767e-03	-2.028703e-02	2.556538e-02	-6.079866e-03
## 2-74338	1.320374e-02	1.551986e-02	-7.393737e-04	-2.518232e-02
## 2-74356	-1.546854e-02	1.235240e-02	2.059966e-02	1.606932e-02
## 2-74454	1.320374e-02	1.551986e-02	-7.393737e-04	-2.518232e-02
## 2-74456	4.666712e-02	6.733818e-03	-3.960063e-03	1.717150e-02
## 2-74572	1.006472e-02	1.111713e-02	6.053319e-03	-3.276145e-02
## 2-74574	-3.163844e-02	7.343866e-02	2.209404e-02	7.744002e-03
## 2-74576	2.353167e-02	-2.546131e-02	-2.536559e-03	-7.012237e-02
## 2-74591	-1.724075e-04	-4.691002e-02	-2.145445e-02	-8.800108e-03
## 2-74654	-2.613324e-02	6.038365e-02	2.880104e-02	1.236891e-02
## 2-74683	1.733407e-02	-3.164765e-03	1.447200e-03	-4.831889e-02
## 2-74716	-2.613324e-02	6.038365e-02	2.880104e-02	1.236891e-02
## 2-74776	-4.366518e-03	-7.218890e-03	1.612071e-02	-5.589053e-03
## 2-74777	-1.109638e-02	3.180584e-02	3.888169e-02	-3.791443e-03
## 2-74800	3.706868e-02	1.600663e-02	-2.527562e-03	-5.721949e-02
## 2-74815	2.441276e-02	-2.422225e-02	2.075600e-03	-8.009630e-02
## 2-74865	-1.012301e-02	-1.111813e-02	1.517280e-02	1.453700e-03
## 2-74867	-1.355179e-02	-8.234212e-03	-3.340203e-02	-1.192491e-02
## 2-74926	-1.565076e-02	-5.617372e-02	9.318207e-02	-1.148817e-01
## 2-74964	-1.136908e-02	1.808237e-02	-6.657705e-03	-9.005898e-04
## 2-75009	-4.150450e-03	-3.074180e-02	-2.550149e-03	9.567322e-04
## 2-75044	5.832939e-02	1.327941e-02	-9.164315e-03	3.187883e-02
## 2-75049	-4.083198e-02	2.683009e-02	5.354472e-02	3.083790e-02
## 2-75053	-1.355179e-02	-8.234212e-03	-3.340203e-02	-1.192491e-02
## 2-75059	6.211351e-02	7.698890e-03	-5.031363e-03	2.426493e-02
## 2-75124	-3.934501e-03	1.309906e-02	2.421906e-02	-4.065365e-03
## 2-75278	-1.323876e-02	2.291834e-02	4.006102e-02	1.095090e-03
## 2-75306	-1.878888e-02	8.295288e-03	-5.170410e-02	-4.488169e-03
## 2-75317	5.162941e-02	-2.877118e-02	3.669707e-03	-1.115914e-01
## 2-75319	1.924268e-01	2.754692e-02	-2.359197e-02	6.971952e-02
## 2-75354	-3.413451e-03	1.137318e-02	2.103599e-02	-3.421134e-03
## 2-75386	-2.352146e-02	8.227468e-03	-8.200158e-02	-5.447830e-03
## 2-75398	-2.836382e-02	-1.190048e-02	-7.814190e-02	-1.040799e-02
## 2-75399	-1.126636e-02	-2.094466e-02	2.544775e-02	-6.582298e-02

## 2-75404	6.293702e-02	1.427615e-02	-4.885364e-03	2.521870e-02
## 2-75446	-2.814586e-03	-3.395335e-02	-7.323585e-03	-3.415522e-03
## 2-75455	6.293702e-02	1.427615e-02	-4.885364e-03	2.521870e-02
## 2-75499	-2.012580e-02	4.868268e-02	7.205998e-02	3.058023e-03
## 2-75505	-7.016857e-03	2.532072e-02	-2.105934e-02	-7.688097e-03
## 2-75517	1.430681e-02	-1.593499e-02	1.089554e-03	-4.043771e-02
## 2-75537	-2.613324e-02	6.038365e-02	2.880104e-02	1.236891e-02
## 2-75565	3.800929e-03	5.883467e-03	2.020236e-02	-2.902901e-02
## 2-75637	-1.274746e-02	1.244001e-02	2.982384e-02	1.623558e-02
## 2-75640	6.570865e-02	2.734563e-02	-9.064588e-03	5.933323e-02
## 2-75668	2.382925e-02	8.776367e-03	4.765354e-03	-4.041213e-02
## 2-75728	4.295489e-02	1.950034e-02	-1.571514e-03	-5.591497e-02
## 2-75779	-2.599936e-02	-3.086956e-03	2.495573e-02	1.637239e-02
## 2-75818	-6.324564e-03	1.407762e-02	2.368291e-02	-7.414365e-04
## 2-75844	3.011929e-02	1.017157e-02	-4.678601e-03	2.029359e-02
## 2-75853	-1.680219e-02	1.134295e-02	-4.024221e-02	-3.225580e-03
## 2-75881	-2.032550e-03	-7.703166e-02	1.199687e-02	3.717913e-02
## 2-75949	3.800929e-03	5.883467e-03	2.020236e-02	-2.902901e-02
## 2-75970	3.048447e-01	7.678329e-02	-3.741915e-02	1.735034e-01
## 2-75977	1.647054e-02	-2.639702e-03	1.336951e-03	-4.701468e-02
## 2-76011	-3.303402e-04	-4.769793e-03	-7.230856e-02	-3.879656e-03
## 2-76017	-1.101048e-02	2.103118e-02	3.311502e-02	-1.899700e-04
## 2-76043	-3.151708e-02	-4.423761e-02	-1.925046e-02	2.941790e-02
## 2-76216	-3.904096e-03	-8.852105e-02	1.397670e-02	4.321513e-02
## 2-76237	-3.519555e-03	-2.907368e-02	5.217810e-02	-1.079623e-02
## 2-76313	1.158385e-02	-1.347878e-02	5.474469e-05	-3.600885e-02
## 2-76465	-1.966375e-02	4.410096e-02	-3.089158e-02	-8.360752e-03
## 2-76479	-2.131199e-02	-3.906269e-03	9.749453e-03	1.332908e-02
## 2-76541	-1.509864e-02	4.947563e-02	-3.270815e-02	-9.123735e-03
## 2-76580	-4.961364e-03	-2.209701e-02	4.124185e-02	-9.373266e-03
## 2-76609	3.533634e-02	-1.853433e-02	-1.076636e-03	-6.221297e-02
## 2-76621	-7.318392e-03	-8.652975e-03	2.168406e-02	-3.335490e-02
## 2-76659	-1.271827e-02	5.443300e-03	1.065427e-02	1.245054e-02
## 2-76686	-1.235962e-02	5.254026e-03	9.019722e-03	1.222376e-02
## 2-76700	-1.362288e-02	-4.131877e-02	-5.390870e-03	9.422537e-03
## 2-76790	-1.910930e-02	2.744510e-02	2.438453e-02	1.057213e-02
## 2-76805	-8.519954e-02	-4.004696e-02	-1.964837e-01	-3.459251e-02
## 2-76954	4.701883e-02	3.775426e-03	-4.600340e-03	1.365273e-02
## 2-76956	1.320429e-03	-3.420999e-02	-1.347380e-02	-7.504971e-03
## 2-77009	-1.859115e-02	4.198351e-02	2.423649e-02	-7.905868e-04
## 2-77066	1.008557e-01	3.989392e-02	-1.470714e-02	8.052693e-02
## 2-77085	3.535586e-02	5.539201e-03	-3.133444e-03	1.576327e-02
## 2-77114	3.067991e-02	-1.571995e-02	-6.884283e-04	-4.984802e-02
## 2-77120	3.899616e-02	5.781032e-03	-3.738320e-03	1.735220e-02
## 2-77173	-4.609231e-02	-8.689648e-03	4.031927e-02	3.702032e-02
## 2-77182	-2.836382e-02	-1.190048e-02	-7.814190e-02	-1.040799e-02
## 2-77189	1.291679e-01	4.906019e-02	-1.807805e-02	9.582927e-02
## 2-77202	1.132329e-02	3.161446e-02	-3.918082e-03	-4.220183e-02
## 2-77231	-7.954111e-03	1.734624e-02	2.784210e-02	-3.499990e-03
## 2-77251	-2.530839e-02	-1.015688e-02	7.907747e-03	3.771775e-03
## 2-77269	1.306747e-01	4.926006e-02	-1.808111e-02	9.606530e-02
## 2-77328	-4.628860e-02	1.149357e-01	1.203683e-02	2.246269e-03
## 2-77378	-4.888353e-02	-2.350955e-02	-1.150755e-01	-2.518038e-02
## 2-77383	3.760731e-04	-2.950023e-02	-7.574579e-03	-4.787085e-03

## 2-77424	-2.808882e-02	-5.580766e-03	2.145861e-02	2.363202e-02
## 2-77465	-2.311190e-02	3.722115e-02	2.788120e-02	9.844651e-03
## 2-77535	-5.582428e-03	-4.827666e-02	9.269824e-03	2.353556e-02
## 2-77567	-2.347033e-02	-7.941023e-03	5.063746e-03	4.316304e-03
## 2-77572	-1.595034e-02	-3.712710e-03	4.859807e-03	-5.268174e-03
## 2-77623	3.530479e-02	-4.780143e-03	1.387793e-03	-3.017014e-02
## 2-77659	-1.993242e-01	-3.126827e-01	-2.171045e-01	6.089308e-02
## 2-77800	-3.385285e-03	-2.855380e-02	2.791331e-02	-7.481659e-03
## 2-77844	1.708614e-03	-2.324719e-02	1.435559e-02	-3.688918e-02
## 2-77846	1.778857e-02	-1.101181e-03	3.116666e-03	-3.115678e-02
## 2-77870	-4.973142e-05	-2.675543e-02	4.431439e-02	-1.958002e-02
## 2-77880	-3.385285e-03	-2.855380e-02	2.791331e-02	-7.481659e-03
## 2-77889	-2.847560e-02	-5.013421e-03	-1.839096e-01	7.499019e-04
## 2-77894	-3.514327e-03	-8.143730e-02	1.259930e-02	4.047959e-02
## 2-77901	5.233453e-03	1.339453e-03	9.920810e-03	-2.653348e-02
## 2-77929	-5.119322e-02	-1.094119e-02	9.348355e-04	1.874721e-02
## 2-78120	1.078361e-03	-7.812643e-03	-7.080292e-02	-2.827062e-03
## 2-78123	-5.119322e-02	-1.094119e-02	9.348355e-04	1.874721e-02
## 2-78158	-1.742652e-02	3.626776e-02	2.515019e-03	-5.852634e-03
## 2-78165	1.422553e-01	5.239396e-02	-1.946942e-02	9.364641e-02
## 2-78177	-3.498555e-02	-1.278900e-02	-8.035870e-02	-1.223258e-02
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## 2-78426	-8.853860e-03	-8.732493e-03	2.444185e-02	-3.478044e-02
## 2-78443	-2.983839e-02	-2.736456e-03	2.690540e-02	2.087108e-02
## 2-78541	-3.195292e-02	-9.001088e-03	-7.103022e-02	-8.902380e-03
## 2-78599	-2.983839e-02	-2.736456e-03	2.690540e-02	2.087108e-02
## 2-78604	3.890921e-02	1.574259e-02	-5.415060e-03	3.161607e-02
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## 2-78660	-3.033986e-03	-8.000144e-02	1.227934e-02	3.972998e-02
## 2-78677	-2.480472e-02	-8.800006e-03	6.677960e-03	2.681373e-03
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## 2-78844	-3.846184e-02	-8.470460e-03	3.368477e-02	3.444172e-02
## 2-78857	-9.683540e-03	2.581364e-02	-1.996580e-02	-3.464626e-03
## 2-78873	-1.856710e-02	-1.017113e-02	8.217581e-03	-1.524076e-03
## 2-78926	1.864483e-02	-5.284884e-03	2.091003e-03	-1.881948e-02
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## 2-79015	-2.251647e-02	-1.183224e-02	-6.589098e-02	-8.610344e-03
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## 2-79115	2.214709e-02	3.608628e-03	4.226922e-03	-4.755864e-02
## 2-79175	1.134445e-02	1.146497e-02	-1.018632e-03	-2.818519e-02
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## 2-81877	-2.783341e-02	-1.125695e-02	-7.796543e-02	-1.066302e-02
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## 2-85036	8.481464e-02	1.667858e-02	-1.684976e-02	4.599314e-02
## 2-85037	-5.308580e-03	-5.454585e-03	-4.024688e-02	-1.579763e-04
## 2-85138	-1.379390e-01	3.051113e-01	-7.531883e-02	5.961619e-02
## 2-85184	-4.474974e-02	4.150224e-02	5.393543e-02	3.415901e-02
## 2-85222	-1.684224e-02	3.712693e-02	1.424272e-02	8.707803e-03
## 2-85278	-4.205035e-02	6.053815e-02	-9.027559e-02	-1.735077e-02
## 2-85285	6.165647e-02	-3.397195e-03	-2.838131e-02	-3.270522e-02

## 2-85301	1.895019e-02	-6.423582e-03	-2.948028e-03	-5.748724e-02
## 2-85305	2.165768e-02	1.013717e-02	1.234889e-02	-3.668023e-02
## 2-85332	-1.500626e-02	3.164353e-02	-3.862961e-02	-5.162337e-03
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## 2-85490	-1.451835e-02	-1.411192e-02	1.445049e-02	6.827244e-03
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## 2-87369	9.225886e-03	1.324824e-02	-5.201931e-03	-1.406660e-02
## 2-87382	-4.422105e-02	9.283972e-02	5.441291e-02	9.187809e-03
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## 2-96109	3.388387e-02	1.322145e-02	-5.308066e-03	1.142645e-02
## 2-96231	-7.372582e-03	-2.165329e-02	2.671018e-02	-1.106578e-02
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## 2-99570 -3.685938e-03 -2.796085e-02 2.480639e-02 -7.893086e-03
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## 3-101850	3.604845e-02	-3.459400e-03	-5.504029e-03	8.333314e-03
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## 3-102161	-3.096997e-03	1.127540e-02	1.771011e-02	7.648166e-05
## 3-102223	2.454390e-02	1.287199e-02	5.893755e-03	-6.686074e-02
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## 3-102413	4.135907e-02	1.039512e-02	-6.010475e-03	2.467246e-02
## 3-102414	-9.754449e-03	-4.615350e-02	-1.374963e-01	-1.956217e-02
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## 3-102537	4.372766e-01	1.451294e-01	1.238397e-02	7.949675e-03
## 3-102619	3.462643e-02	6.198537e-03	-7.068072e-04	6.036903e-03
## 3-102628	-1.747112e-02	-4.543399e-02	-1.397321e-01	-1.359683e-02
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## 3-102760	-2.601821e-02	-1.020566e-02	-6.817695e-02	-9.945537e-03
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## 3-103182	3.355468e-02	7.211185e-03	3.005591e-04	1.860873e-03
## 3-103206	-7.784686e-03	-1.627272e-02	2.666387e-02	-2.591930e-02
## 3-103297	-2.698254e-02	-8.746851e-03	2.286152e-02	2.812209e-02
## 3-103332	-1.389959e-02	-3.218985e-02	-1.175452e-02	1.056843e-02
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## 3-103510	2.323302e-02	5.203751e-03	1.303110e-03	-2.762767e-02
## 3-103541	-4.961567e-02	-3.377954e-02	-1.055154e-01	-1.304809e-02
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## 3-107905	-3.543157e-02	-1.080797e-02	-9.105940e-02	-1.372525e-02
## 3-107933	5.182545e-02	-1.351016e-02	7.138892e-04	-6.073659e-02
## 3-108026	-5.055618e-03	-4.005796e-02	5.274934e-02	-3.840723e-02
## 3-108036	-4.869013e-02	1.148154e-02	2.010515e-02	4.192522e-02
## 3-108051	2.362052e-03	-2.105898e-02	-4.703816e-02	-2.429822e-03
## 3-108064	3.366317e-02	9.553834e-03	-4.611703e-03	2.146690e-02
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## 3-108178	2.745951e-02	-1.380576e-02	2.426498e-03	-4.544765e-02
## 3-108182	-2.046628e-02	2.913810e-02	3.349101e-02	8.652112e-03
## 3-108239	-1.979843e-02	-1.577919e-02	-4.876337e-02	-1.117282e-02
## 3-108248	-7.387143e-03	1.478123e-02	-5.547976e-02	-2.192659e-03
## 3-108277	1.345988e-03	-2.078673e-02	-5.012158e-02	-2.258526e-03
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## 3-108493	-7.842701e-03	2.163741e-02	2.953508e-02	-5.124816e-03
## 3-108515	-1.456590e-03	-1.383129e-02	2.412327e-02	-1.315091e-02
## 3-108822	3.137762e-02	6.950751e-03	-4.516921e-05	1.104349e-03
## 3-108871	8.266002e-03	-4.122731e-03	-2.488899e-04	-4.011442e-02
## 3-108871_2	-6.195112e-03	-3.532295e-02	6.967400e-04	8.989792e-03
## 3-108883	-5.192961e-03	-2.548007e-02	2.461975e-02	-1.034880e-02
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## 3-109489      1.774385e-02  6.855047e-03  1.858830e-03 -3.280297e-02
## 3-109530     -5.960264e-03  1.481791e-02 -2.403419e-02 -4.991540e-03
## 3-109536     -2.050471e-02  3.899716e-02 -5.187455e-02 -1.057956e-02
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## 3-109555      4.533507e-02 -2.003708e-02  3.116400e-03 -4.721859e-02
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## 3-113421      5.036497e-02  1.276639e-02 -1.781488e-03  1.206214e-02
## 3-113527     -5.890542e-03  1.641918e-02 -2.697872e-02 -2.316377e-03
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## 3-113738     -2.396499e-02  5.734971e-02  2.137914e-02  8.802760e-03
## 3-113919      2.775200e-02  7.376722e-03 -6.801514e-04  4.832661e-03
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## 3-113984     -1.563184e-02  3.787789e-02  4.002821e-02 -4.135613e-03
## 3-114035      3.384081e-02  7.362519e-03 -3.987545e-05  1.460336e-03
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## 3-117845 -2.870213e-02 -2.082362e-03 -5.459184e-02 -2.833335e-03
## 3-117874 -6.349028e-03 -2.305178e-02 2.305073e-02 -8.603460e-03
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## 3-121572	-1.032931e-02	-1.552372e-02	1.706196e-02	-6.125410e-04
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## 3-121986	-2.699817e-02	-5.204152e-03	-1.776220e-03	6.728427e-03
## 3-122003	-2.259480e-02	5.444033e-02	2.112006e-02	6.379037e-03
## 3-122060	-6.371881e-03	1.928943e-02	3.468826e-02	-5.705376e-03
## 3-122144	-5.882944e-03	7.728297e-03	-6.282332e-02	-4.949427e-03
## 3-122180	1.117148e-02	-8.824097e-03	-4.499249e-03	-2.925190e-02
## 3-122191	-5.189743e-03	1.743110e-02	2.946223e-02	-5.924420e-03
## 3-122209	-5.189743e-03	1.743110e-02	2.946223e-02	-5.924420e-03
## 3-122209_2	-1.585833e-02	-3.538917e-03	-3.367175e-02	-5.520137e-03
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## 3-122288	-1.560004e-02	-2.094757e-02	3.037078e-02	-4.659876e-03
## 3-122292	-3.457114e-03	-4.852395e-02	6.880519e-03	1.114340e-02
## 3-122294	7.364056e-02	2.539360e-02	-1.194282e-02	4.288160e-02
## 3-122360	3.153859e-02	1.003322e-03	6.194531e-04	-6.252230e-03
## 3-122529	4.062534e-02	1.837429e-02	-1.902535e-03	-1.184786e-02
## 3-122576	-1.000605e-02	-9.164068e-02	1.319111e-02	4.780867e-02
## 3-122620	3.198688e-02	1.156438e-03	5.981820e-04	-8.040110e-03
## 3-122691	5.194546e-02	1.133422e-02	1.393392e-03	-1.616531e-02
## 3-122726	-1.988312e-02	-7.304642e-04	2.213527e-02	1.832173e-02
## 3-122794	-1.026867e-02	-1.952768e-02	2.141973e-02	-2.799643e-03
## 3-122833	-9.720370e-03	-9.701680e-02	1.447038e-02	4.925489e-02
## 3-122869	-2.084506e-02	1.852074e-02	-1.264626e-02	9.342248e-03
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## 3-122938	7.953674e-02	-1.378642e-02	-1.054799e-02	-3.055964e-02
## 3-122940	-2.084506e-02	1.852074e-02	-1.264626e-02	9.342248e-03
## 3-122942	-2.164937e-02	7.704845e-03	8.530214e-03	1.972248e-02
## 3-122980	7.634765e-02	-1.231016e-02	-9.490688e-03	-2.935694e-02
## 3-123217	-8.264809e-03	4.147067e-03	-4.029454e-02	-1.001927e-03
## 3-123248	-1.315690e-01	5.470159e-02	-9.839823e-02	5.014190e-02
## 3-123290	1.432739e-02	-1.042883e-02	-2.937286e-03	-2.516221e-02
## 3-123303	-2.353440e-01	2.899368e-01	-9.774712e-02	3.868359e-02
## 3-123317	6.063571e-03	6.432106e-03	7.882028e-03	-1.962450e-02
## 3-123447	-2.004718e-02	1.751606e-02	-1.310648e-02	8.196686e-03
## 3-123452	1.382344e-02	-9.969226e-03	-2.443232e-03	-2.493510e-02
## 3-123620	1.490393e-02	4.773973e-03	4.611358e-03	-1.493997e-02
## 3-123718	-1.360066e-02	-8.243709e-03	7.394119e-03	-8.934263e-03
## 3-123749	-1.320639e-03	9.734514e-03	2.821124e-02	-6.479481e-03
## 3-123785	-1.012726e-02	-5.468989e-02	5.916943e-03	3.539344e-02
## 3-123816	1.084556e-03	1.337345e-02	-2.229259e-02	-2.925458e-03
## 3-123841	-2.225044e-02	2.752626e-03	-6.826469e-04	1.434049e-02
## 3-123856	2.898385e-03	1.025409e-02	-1.825699e-02	-1.775458e-03
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## 3-123867 -2.462639e-01 3.893216e-01 -7.312641e-02 7.956337e-04
## 3-123871 -3.187897e-02 -8.470020e-03 5.256649e-03 1.760838e-02
## 3-123946 4.824889e-03 1.818732e-02 -3.322771e-03 -2.395778e-02
## 3-123994 -2.004718e-02 1.751606e-02 -1.310648e-02 8.196686e-03
## 3-124005 -1.367752e-02 7.077658e-03 1.168796e-02 1.398066e-02
## 3-124033 -1.526195e-02 1.349298e-03 -1.117116e-03 1.012966e-02
## 3-124064 -2.004718e-02 1.751606e-02 -1.310648e-02 8.196686e-03
## 3-124278 -9.407428e-03 -3.457963e-02 4.328843e-02 -2.137445e-03
## 3-124281 -1.234463e-02 6.629460e-03 1.027788e-02 1.239826e-02
## 3-124292 -1.846309e-02 -1.213800e-01 1.696955e-02 6.936771e-02
## 3-124370 -2.196997e-02 1.823720e-02 -1.143268e-02 1.060579e-02
## 3-124498 5.070023e-03 -1.954596e-02 -3.877395e-02 -1.813233e-03
## 3-124545 -1.911557e-02 -9.942347e-03 -4.418148e-02 -8.316833e-03
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## 3-124816 -2.057318e-02 -9.178034e-03 1.905214e-02 2.143524e-02
## 3-124850 -2.793768e-02 -1.071587e-02 -7.633798e-02 -1.157956e-02
## 3-124852 -3.481699e-03 1.208371e-02 2.398888e-02 7.076445e-04
## 3-124855 4.197572e-02 4.738254e-03 5.755407e-03 -2.657261e-02
## 3-124876 -1.969145e-02 -8.930454e-03 1.844382e-02 2.053102e-02
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## 3-124924 -1.045937e-02 -6.437887e-02 7.719838e-03 3.960230e-02
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## 3-124941 6.811313e-02 1.679989e-02 1.344187e-02 -6.914424e-02
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## 3-126041 -1.447325e-03 -2.194310e-02 2.858282e-02 -3.531724e-03
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## 3-126259 2.014889e-02 -6.533712e-03 1.200894e-02 -4.742393e-02
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## 3-126822 -4.207002e-02 -8.148580e-03 -1.622651e-03 1.089890e-02
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## 3-127174 -2.041432e-02 -1.383850e-01 1.849295e-02 8.042368e-02
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## 3-127483 -2.149729e-02 6.002252e-02 -3.933444e-02 -1.056037e-02
## 3-127530 -1.169194e-02 -4.630132e-02 5.391883e-02 -8.731338e-03
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## 3-128099     -2.265913e-02 -9.273513e-03  2.121362e-02  2.301018e-02
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## 3-128160      4.340398e-02  1.400155e-02 -6.416505e-03  2.936565e-02
## 3-128223     -3.930365e-02 -9.578077e-04  2.305047e-03  5.559456e-03
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## 3-128275     -3.015400e-02  6.037198e-02  7.325286e-02  3.561947e-03
## 3-128395     -6.953492e-03  6.321817e-03  2.535567e-02  9.915713e-03
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## 3-128552      3.849433e-02  1.111029e-02 -5.028272e-03  1.947258e-02
## 3-128605     -1.880524e-02  4.551332e-02  1.606731e-02  4.977822e-03
## 3-128620      1.946436e-02 -2.346686e-04  9.556538e-03 -3.395995e-02
## 3-128622     -3.980971e-02 -1.565435e-03  2.847800e-03  5.571730e-03
## 3-128694      7.916786e-02  1.457228e-02 -9.780800e-03  4.521901e-02
## 3-128698     -1.816211e-02  2.730905e-02  3.144563e-02  8.751055e-03
## 3-128703     -4.302013e-02 -5.095345e-03  3.153865e-03  1.557990e-02
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## 3-128737     -2.053727e-02  5.971809e-02 -7.637922e-02 -1.164669e-02
## 3-128762     -1.642408e-02 -5.323296e-03  8.369430e-03 -8.735925e-03
## 3-128765     -5.129467e-03 -6.055588e-04  1.005214e-03 -1.027257e-02
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## 3-128935     -1.090289e-02  9.352050e-03 -4.125380e-02 -4.072813e-03
## 3-128948     -1.933592e-02 -9.511018e-04  6.524698e-04  1.204172e-02
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## 3-129030     -1.120137e-02  3.406486e-02  4.099753e-02 -6.308087e-03
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## 3-129057     -2.433555e-02 -3.252851e-03 -4.946321e-02 -3.620717e-03
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## 3-129396      1.213026e-02 -4.017979e-03  1.005017e-02 -1.989558e-02
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## 3-129632      2.898990e-03 -7.732349e-03  1.627668e-03 -2.288415e-02
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## 3-129684     -2.037345e-02 -6.790114e-03 -2.502060e-04  7.620208e-03
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## 3-129853     -5.587881e-03 -2.003309e-02  2.906041e-02 -2.928369e-03
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## 3-129956     -1.790483e-02 -4.888444e-02  5.665449e-02 -9.250548e-02
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## 3-130456     -7.670680e-03 -7.435950e-02  1.125339e-02  4.101188e-02
## 3-130541     -1.820629e-02 -7.066909e-03  2.572391e-02  1.705415e-02
## 3-130590      3.731214e-02  3.305651e-03 -5.700232e-03  1.539022e-02
## 3-130629      8.669352e-03  1.375216e-02 -4.053847e-03 -1.746152e-02
## 3-130644     -3.013500e-03  1.016248e-02 -2.401627e-02 -1.808340e-03
## 3-130661     -3.459425e-02 -1.162297e-02 -7.453874e-02 -1.115842e-02
## 3-130672      5.197687e-02  6.688432e-03 -8.224174e-03  2.533690e-02
## 3-130687     -1.751443e-02 -1.000945e-02  3.025354e-02  1.650664e-02
## 3-130733     -9.225470e-02 -3.881161e-02 -1.929158e-01 -2.891215e-02
## 3-130780      3.206404e-02 -4.298379e-03  1.366134e-03 -2.771587e-02
## 3-130794     -1.805324e-02 -4.648905e-02 -7.731856e-03  1.271184e-02
## 3-130797     -2.565280e-02 -4.455092e-03 -6.881457e-04  1.246998e-02
## 3-130877     -3.555874e-02 -1.174698e-02 -7.664424e-02 -1.097284e-02
## 3-130896     -3.683614e-02  8.465363e-02  4.649844e-02  9.325403e-03
## 3-130898     -3.555874e-02 -1.174698e-02 -7.664424e-02 -1.097284e-02
## 3-130996      1.460127e-01  2.379221e-02 -1.269607e-02  4.531523e-02
## 3-131031     -2.945659e-02 -9.978995e-03 -7.940884e-02 -1.201473e-02
## 3-131084     -3.241769e-02 -1.082438e-02 -7.213039e-02 -1.290010e-02
## 3-131107     -3.548851e-02  5.919201e-02 -1.473061e-01 -1.802479e-02
## 3-131114      3.997473e-04 -1.448206e-02  3.397937e-02 -1.560196e-02
## 3-131201     -1.872294e-02  3.783125e-02 -3.593622e-02 -6.764738e-03
## 3-131227      4.923915e-02 -4.879257e-03 -2.939615e-03 -1.598745e-02
## 3-131459     -9.615105e-03  2.983314e-02 -7.100153e-02 -7.191769e-03
## 3-131575     -1.218508e-02 -7.019177e-02  1.152281e-02  4.096757e-02
## 3-131584      3.561256e-02 -5.253362e-03 -3.244029e-03 -8.026883e-03
## 3-131668     -1.661279e-02  3.907607e-02 -3.046436e-02 -8.476639e-03
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## 3-131685      4.109153e-02  1.194896e-02 -4.752105e-03  2.711267e-02
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## 3-131698     -1.252389e-02 -2.403882e-02  1.910359e-02 -5.780647e-04
## 3-131715     -3.993994e-02 -1.043223e-04 -5.304990e-03  2.375501e-02
## 3-131728     -2.623858e-02 -1.036319e-01  3.267072e-03  4.591489e-02
## 3-131765     -6.351385e-03 -1.202487e-02  1.982357e-02 -4.409160e-03
## 3-131858     -4.589318e-03 -1.269575e-03  1.236777e-03 -1.131407e-02
## 3-132025     -1.327112e-02 -3.847562e-02 -6.710431e-04  2.079548e-02
## 3-132069     -1.218413e-02 -1.089912e-02  2.554227e-02 -3.580350e-02
## 3-132097      1.687503e-03 -1.854128e-02  2.724082e-02 -1.579308e-02
## 3-132119     -2.154818e-03  2.212393e-02  1.245880e-03 -1.634979e-02
## 3-132134     -5.816364e-03 -2.475892e-02  2.135484e-02 -5.454973e-03
## 3-132134_2   -2.785642e-03  6.027124e-03 -6.164727e-02 -3.693823e-03
## 3-132155      7.825967e-03 -1.158137e-02 -1.526866e-03 -2.905676e-02
## 3-132174     -1.939641e-02 -3.966713e-04  2.049869e-02  1.428620e-02
## 3-132207     -1.214655e-02 -2.814450e-02 -1.184032e-01 -1.273079e-02
## 3-132215     -3.989389e-02  1.398430e-02 -5.092858e-03  2.461450e-02

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## 3-132346     -4.342465e-02 -2.245618e-02  2.277344e-02  6.208596e-03
## 3-132350     -4.342465e-02 -2.245618e-02  2.277344e-02  6.208596e-03
## 3-132354     -4.589318e-03 -1.269575e-03  1.236777e-03 -1.131407e-02
## 3-132355     -7.897030e-03  2.019170e-02  3.085595e-02 -1.106173e-03
## 3-132378     -2.869743e-02  5.036285e-02  5.583400e-02  1.194237e-02
## 3-132391     -2.551263e-02  8.053576e-03  1.735222e-02  2.335817e-02
## 3-132398     7.582631e-02  2.054126e-02 -9.814445e-03  4.720416e-02
## 3-132398_2   6.162908e-03  2.844818e-02  6.709934e-04 -3.733190e-02
## 3-132400     1.052025e-03 -2.748632e-02  4.950566e-02 -8.885207e-02
## 3-132458     -4.216798e-02 -9.835550e-03  4.087436e-02  3.504046e-02
## 3-132463     -7.040301e-03  1.171909e-02  2.371071e-02  5.326606e-03
## 3-132483     -2.551263e-02  8.053576e-03  1.735222e-02  2.335817e-02
## 3-132539     -2.159480e-02 -6.575156e-04  2.182222e-02  1.360522e-02
## 3-132581     1.166656e-02 -2.409936e-02  3.731231e-03 -6.695987e-02
## 3-132589     -2.274098e-02 -3.199956e-02  3.928512e-02  1.245326e-02
## 3-132589_2   1.033033e-01  3.137366e-02 -1.367538e-02  6.542018e-02
## 3-132618     -2.159480e-02 -6.575156e-04  2.182222e-02  1.360522e-02
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## 3-132657     -7.211598e-03  1.269537e-02  2.704613e-02  6.610720e-03
## 3-132726     3.415312e-02  8.315948e-03 -4.346477e-03  1.938056e-02
## 3-132837     3.430312e-02  9.036465e-03  2.581736e-03 -2.729514e-02
## 3-132895     -3.249021e-02 -9.274862e-03 -7.271556e-02 -1.137220e-02
## 3-132922     -2.159480e-02 -6.575156e-04  2.182222e-02  1.360522e-02
## 3-132999     -1.604232e-02 -1.834038e-03 -3.765514e-02 -6.452257e-03
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## 3-133012     2.320738e-01  6.715542e-02 -3.203035e-02  1.248414e-01
## 3-133028     1.028234e-02 -3.703602e-03  1.387635e-02 -6.282759e-03
## 3-133090     4.611368e-02  1.671964e-02 -7.183990e-03  3.348068e-02
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## 3-133220     -4.738819e-02 -1.738764e-02 -9.108426e-02 -1.815258e-03
## 3-133226     1.057676e-02  7.672045e-03  1.001952e-02 -2.143933e-02
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## 3-133287     -8.822328e-03 -2.298355e-03  7.537068e-03 -7.097276e-03
## 3-133289     3.358737e-02  1.238493e-02 -2.164616e-03 -5.481974e-05
## 3-133326     -2.074442e-02 -1.787200e-04  2.214590e-02  1.483843e-02
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## 3-133726 -2.208410e-02 7.096493e-03 -7.422662e-02 -6.559262e-03
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## 3-133813 -8.111371e-03 -2.821663e-03 6.212837e-03 4.929010e-03
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## 3-133915 -7.489179e-03 1.614675e-02 3.135003e-02 5.558142e-03
## 3-133920 -1.505576e-02 4.183649e-03 6.059545e-03 1.281785e-02
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## 3-133976 8.666753e-03 -1.645254e-02 -5.811974e-04 -2.735039e-02
## 3-133995 -7.381117e-02 1.026842e-01 -2.050178e-01 -3.035719e-02
## 3-134087 -2.074442e-02 -1.787200e-04 2.214590e-02 1.483843e-02
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## 3-134098 4.788221e-02 1.779396e-02 -2.294202e-03 -2.437765e-03
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## 3-134148 2.448007e-03 -2.321188e-02 -2.239957e-02 -8.795837e-03
## 3-134314 -1.814394e-02 -3.023455e-02 -1.170530e-02 1.106895e-02
## 3-134343 -2.617705e-02 6.080691e-02 3.192288e-02 8.889106e-03
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## 3-134421 -7.761145e-03 1.402956e-02 3.085863e-02 7.477881e-03
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## 3-134461 -4.894916e-03 -4.299679e-02 3.734669e-02 -1.257573e-02
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## 3-134539 -7.723417e-03 -5.268693e-02 4.704272e-02 -1.903252e-02
## 3-134571 -1.604232e-02 -1.834038e-03 -3.765514e-02 -6.452257e-03
## 3-134597 -2.667541e-02 3.446774e-02 7.057096e-02 2.276431e-02
## 3-134798 1.958978e-01 3.917858e-02 -2.602555e-02 8.592285e-02
## 3-134826 -1.549027e-02 3.598435e-02 -2.436619e-02 -6.779900e-03
## 3-134919 -7.903209e-03 1.673427e-02 3.286648e-02 6.037799e-03
## 3-134959 -9.680536e-03 -1.921210e-02 -5.609897e-02 -5.651681e-03
## 3-134976 -2.610692e-02 6.076104e-02 3.058172e-02 9.880522e-03
## 3-135026 1.966986e-03 -1.528323e-02 3.122050e-02 -1.498184e-02
## 3-135144 -1.721134e-02 -6.715749e-03 8.982304e-03 -9.815997e-03
## 3-135149 2.288733e-02 -6.055637e-03 -4.530327e-03 -1.937764e-05
## 3-135174 1.985051e-03 -2.516097e-02 -2.241393e-02 -8.820996e-03
## 3-135192 -3.039824e-02 6.839215e-02 4.112126e-02 5.169470e-03
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## 3-135202 -1.260255e-02 7.395808e-03 1.036054e-02 1.192693e-02
## 3-135203 -2.151298e-02 -6.392815e-03 5.424792e-03 -1.162833e-04
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## 3-135280 -1.070354e-02 -3.035663e-03 1.656177e-03 7.159560e-03
## 3-135293 -6.733955e-03 6.095021e-03 2.302680e-02 6.904404e-03
## 3-135345 6.746114e-02 2.187002e-02 -7.444967e-03 4.143807e-02

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## 3-135621      1.207296e-02  1.339232e-02 -9.976557e-04 -2.450587e-02
## 3-135629     -2.226696e-02 -1.447421e-01  1.468188e-02  6.460822e-02
## 3-135634      2.322274e-02 -2.700571e-03  1.161220e-02 -3.546171e-02
## 3-135661      3.817506e-02  9.473540e-03  3.402348e-04 -6.229722e-03
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## 3-135681     -6.430449e-02 -1.561400e-03  1.625875e-02  3.097716e-02
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## 3-135851     -2.645803e-02 -1.055027e-02 -7.385104e-02 -1.170757e-02
## 3-135879     -2.901932e-02  6.406640e-02 -8.997963e-02 -1.466944e-02
## 3-135894      2.301158e-03 -2.438958e-02 -2.225277e-02 -9.139342e-03
## 3-135927     -2.013190e-02 -5.402119e-02 -1.318387e-02  1.571606e-02
## 3-135958     -1.879788e-03  9.179670e-03 -2.230149e-02 -1.789501e-03
## 3-135971      3.973055e-02  1.265311e-02 -5.073215e-03  1.322465e-02
## 3-136002      8.669269e-02  1.353345e-02 -1.215588e-02  4.485346e-02
## 3-136008      2.754825e-02 -3.203061e-02  2.442217e-02 -7.136279e-02
## 3-136019     -2.710351e-02  6.450647e-02  3.799780e-02  4.257811e-03
## 3-136039     -2.953901e-01 -3.081855e-01  1.939560e-02  2.131442e-02
## 3-136085     -1.608432e-02  3.943030e-02 -4.617387e-02 -9.535317e-03
## 3-136104     -9.767437e-03 -4.792909e-03 -4.929256e-02 -2.767352e-03
## 3-136130     -2.479454e-02  9.047539e-03  1.052297e-02  2.235035e-02
## 3-136175     -8.456483e-03 -2.565011e-02  2.174908e-03  7.931087e-03
## 3-136195      1.791295e-03 -2.322552e-02 -2.121995e-02 -8.574102e-03
## 3-136216     -2.254705e-01  3.102145e-01 -8.477059e-03  1.459899e-02
## 3-136218     -7.832398e-03  1.653977e-02  3.137175e-02  3.641177e-03
## 3-136227     -1.926738e-02  2.971710e-02  1.783421e-02  5.767195e-03
## 3-136321     -6.980407e-03 -3.435250e-02  3.349915e-02 -1.376734e-02
## 3-136343      2.871336e-01  3.244602e-01  8.334765e-02 -9.903927e-02
## 3-136347      5.066417e-02  1.691929e-02  1.026849e-02 -5.113935e-02
## 3-136408      2.432595e-01  3.320984e-01  1.157659e-01 -6.339191e-02
## 3-136444     -3.481899e-02  1.129288e-02  1.712679e-02  2.855621e-02
## 3-136445     -2.016448e-02  3.236050e-02 -3.507829e-02 -9.070116e-03
## 3-136466      2.564964e-02 -6.046512e-03 -4.588755e-03 -2.491268e-03
## 3-136474     -2.242066e-02 -1.974709e-03 -4.283513e-03  1.307946e-02
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## 3-137031 -2.609497e-02 6.462889e-02 3.409411e-02 7.322035e-03
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## 3-137040 -4.488544e-02 4.958163e-02 -9.781938e-02 -1.317827e-02
## 3-137056 -2.490661e-02 6.027465e-02 2.976102e-02 7.818157e-03
## 3-137191 4.769143e-03 5.449992e-03 1.896168e-02 -1.898611e-02
## 3-137212 -1.032771e-02 -4.372797e-02 -5.968720e-03 6.962777e-03
## 3-137259 9.151218e-02 3.376059e-02 -1.559814e-02 6.029464e-02
## 3-137298 3.201655e-03 -1.914742e-02 2.861605e-02 -1.441188e-02
## 3-137302 1.152778e-02 -1.901530e-02 8.316811e-03 -4.111960e-02
## 3-137335 -7.625568e-03 1.495455e-02 2.885770e-02 4.792334e-03
## 3-137433 1.190799e-03 -1.670566e-02 -3.618141e-02 -6.915559e-04
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## 3-137588 2.473910e-02 -3.979033e-03 3.483203e-03 -4.248468e-02
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## 3-138056 -1.531026e-02 -8.930316e-02 -2.360132e-02 2.283132e-03
## 3-138068 -1.372091e-02 1.909644e-02 2.390017e-02 4.451467e-03
## 3-138094 -1.919699e-02 1.146051e-02 7.435179e-03 1.875561e-02
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## 3-139227 -1.223942e-01 -2.395929e-01 8.500879e-02 8.367292e-02
## 3-139274 5.740478e-02 -6.500120e-02 4.417788e-02 -1.035130e-01
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## 3-140337 -1.102540e-02 2.201542e-02 -5.029391e-02 -2.728527e-03
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## 3-141425     -1.447033e-02 -5.668571e-02  1.604795e-03  3.057396e-02
## 3-141445     -1.617943e-04 -3.272069e-02 -1.130566e-03 -3.870881e-03
## 3-141453      6.231079e-03  1.529978e-02 -1.818902e-03 -2.214567e-02
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## 3-141679      2.238882e-02 -4.257782e-03  3.702774e-03 -3.710798e-02
## 3-141752      6.642681e-02  1.262156e-02 -9.700466e-03  3.259878e-02
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## 3-141850      7.205508e-03 -1.175859e-02 -5.053540e-04 -4.886330e-02
## 3-141952      2.453765e-02 -5.911765e-03  2.580649e-04 -2.035591e-02
## 3-141955     -2.285180e-02 -1.074926e-02  2.323006e-02 -2.052022e-02
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## 3-141976_2   -3.327168e-02  7.790041e-03  2.871278e-02  2.659765e-02
## 3-141997     -2.145376e-01  3.333225e-01 -8.067503e-03  1.170897e-02
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## 3-142360      4.549486e-03 -2.048752e-02 -2.244349e-02 -1.155917e-02
## 3-142371     -2.152433e-03 -3.387637e-02  7.270247e-04 -2.230610e-03
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## 3-143466	4.549486e-03	-2.048752e-02	-2.244349e-02	-1.155917e-02
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## 3-143503	-3.550922e-02	-6.561004e-03	3.529238e-02	3.043063e-02
## 3-143549	-9.591189e-03	-6.750186e-04	1.444879e-03	-1.359881e-02
## 3-143552	-5.196766e-03	1.762058e-02	2.198560e-02	-3.160914e-03
## 3-143583	1.941600e-02	-8.080133e-03	-5.852375e-03	-8.697587e-03
## 3-143658	6.244812e-02	2.691433e-02	-8.414385e-03	5.110305e-02
## 3-143690	-1.897910e-02	-1.433629e-02	1.628650e-02	-1.102014e-02
## 3-143725	-1.625888e-02	-6.899079e-03	-3.615856e-02	-1.023826e-02
## 3-143750	6.876939e-02	2.981188e-02	-9.296895e-03	5.705261e-02
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## 4-150472 2.773960e-02 1.059014e-02 -4.627942e-03 1.247124e-02
## 4-150490 -7.566995e-02 -1.232190e-02 6.940239e-02 5.123065e-02
## 4-150496 -6.342195e-02 -2.431744e-02 -8.901864e-02 -4.546120e-03
## 4-150504 -1.454603e-02 8.980523e-03 5.229822e-02 2.408618e-02

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## 4-150684 3.249080e-02 -2.083831e-02 -5.583964e-03 -7.791183e-02
## 4-150690 4.333821e-02 1.362218e-02 -4.341705e-04 -1.690104e-02
## 4-150716 -1.637618e-02 2.860989e-02 4.180702e-02 6.521187e-03
## 4-150744 -2.905830e-02 6.011985e-02 -1.530509e-01 -1.695269e-02
## 4-150808 -2.195568e-02 -1.485948e-02 -5.372162e-02 -1.274775e-02
## 4-150819 -5.849148e-02 1.193084e-01 -1.621408e-01 -1.909080e-02
## 4-150933 -7.670316e-03 7.391964e-03 3.168458e-02 1.560330e-02
## 4-150986 1.877540e-02 1.027864e-02 4.365962e-03 -5.236952e-02
## 4-151025 -1.615842e-02 -9.814414e-03 7.502885e-03 4.127611e-03
## 4-151094 -5.480072e-03 3.767201e-02 2.828489e-02 -1.440412e-02
## 4-151106 -1.948421e-02 3.369708e-02 -1.135146e-02 -4.188996e-03
## 4-151118 7.658911e-03 -2.145233e-02 -5.162023e-02 -2.692434e-03
## 4-151143 -8.850483e-03 1.930498e-03 2.675781e-02 1.338773e-02
## 4-151163 -5.821775e-03 -4.403775e-03 2.154960e-02 -7.264139e-02
## 4-151170 -4.792806e-03 -1.294452e-02 -3.226600e-02 -4.719655e-03
## 4-151215 -8.850483e-03 1.930498e-03 2.675781e-02 1.338773e-02
## 4-151227 -1.615842e-02 -9.814414e-03 7.502885e-03 4.127611e-03
## 4-151232 -1.794529e-02 -9.351192e-03 7.874635e-03 5.749641e-03
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## 4-151243 -8.752216e-03 1.713406e-02 1.099711e-02 2.450785e-03
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## 4-151295 -2.776720e-02 -4.667720e-02 -1.812504e-02 1.653208e-02
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## 4-151888 -3.253218e-02 2.623424e-02 4.455082e-02 3.124437e-02
## 4-151894 8.747020e-02 2.516009e-02 -1.234260e-02 5.761544e-02
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## 4-152183 -3.278126e-02 -1.724567e-02 -6.849003e-02 -2.593846e-03
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## 4-152372 -8.153933e-03 -4.902133e-02 7.545891e-03 2.752214e-02
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## 4-152447 3.807862e-01 1.763992e-02 1.055550e-01 9.398007e-02
## 4-152685 -1.989821e-02 -2.220365e-02 2.771313e-02 -8.475502e-04
## 4-152697 -1.905328e-02 5.291879e-03 7.146830e-03 1.674265e-02
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## 4-152804 1.670783e-02 2.520976e-04 3.040372e-03 -1.033693e-02
## 4-152821 -1.830566e-02 4.151446e-02 2.212573e-02 -7.757469e-04
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## 4-152871 4.199694e-02 -8.576609e-03 3.214880e-03 -1.501408e-02
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## 4-152958 7.300720e-03 -1.519330e-02 -3.882496e-02 -1.226651e-02
## 4-152966 5.250426e-02 -1.688485e-02 -1.650137e-03 -2.608288e-02
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## 4-153011 -9.315747e-03 -1.480147e-02 -6.243632e-02 -2.301707e-03
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## 4-153098 5.464714e-03 -1.292569e-02 -2.998766e-02 -1.926900e-03
## 4-153112 -5.028640e-03 8.236311e-03 2.202872e-02 6.855036e-03
## 4-153112_2 -1.939503e-02 6.055292e-03 6.117424e-03 1.655053e-02
## 4-153145 1.590696e-02 -3.088418e-03 6.164237e-05 -5.181400e-02
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## 4-153200 -2.368144e-02 2.045837e-02 4.026163e-02 2.523202e-02
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## 4-153341 -3.066631e-02 -1.603657e-02 2.976111e-02 2.009055e-02
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## 4-153499 5.757792e-02 1.824023e-02 1.030441e-02 -1.592361e-02
## 4-153512 -1.699417e-02 -1.928417e-02 -1.290868e-02 9.477703e-03
## 4-153548 -6.252157e-03 3.229736e-03 1.946701e-02 1.023767e-02
## 4-153582 -1.104659e-02 -2.214194e-02 -6.424106e-02 -1.295846e-02
## 4-153592 -2.194982e-02 -2.457712e-03 2.149951e-02 1.743724e-02
## 4-153599 -3.883662e-02 -3.357061e-02 -6.729955e-02 -1.869459e-02
## 4-153624 -1.284940e-02 3.160326e-02 2.177487e-04 2.589516e-03
## 4-153627 1.255031e-02 1.646885e-03 1.778520e-03 -3.364355e-02
## 4-153711 -5.227021e-03 -3.283656e-02 5.115286e-02 -1.757418e-02
## 4-153722 -9.859897e-03 3.732509e-02 4.226208e-02 -1.045909e-02
## 4-153772 -1.754726e-02 6.095555e-03 7.558602e-03 1.563647e-02
## 4-153836 -1.569786e-03 -1.008439e-02 -5.776104e-02 -4.043619e-03
## 4-153848 1.494474e-02 -1.542502e-02 -5.626158e-03 -7.441896e-02
## 4-153852 -6.195493e-03 -1.628336e-02 3.281329e-02 -1.260618e-03
## 4-153908 2.351194e-02 1.138730e-02 4.615656e-03 -5.147988e-02
## 4-153960 -2.354489e-02 5.331542e-02 2.248109e-02 8.865270e-03
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## 4-154251 -9.363664e-03 -1.030919e-02 2.642590e-02 -3.695885e-02
## 4-154252 -2.554842e-02 1.634666e-02 2.200731e-02 2.529596e-02
## 4-154260 -1.573181e-02 4.409600e-03 5.852450e-03 1.382251e-02
## 4-154266 -2.554842e-02 1.634666e-02 2.200731e-02 2.529596e-02
## 4-154351 1.756444e-01 4.833904e-02 -2.390538e-02 1.069274e-01
## 4-154369 3.960746e-02 4.897254e-02 3.526439e-02 1.993969e-02
## 4-154395 4.017809e-03 -1.348099e-02 -2.674794e-02 -1.315445e-03
## 4-154419 -1.689935e-02 4.815165e-03 5.455807e-03 1.459456e-02
## 4-154438 2.201197e-02 -1.833205e-02 2.660195e-03 -4.428187e-02

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## 4-154510     -2.665061e-02  2.828979e-02  2.770995e-02  1.403517e-02
## 4-154522     -1.157879e-02 -1.067226e-02  2.650135e-02 -3.625914e-02
## 4-154579     -2.699358e-02  6.237206e-02  3.002977e-02  1.189425e-02
## 4-154585     -2.797283e-02 -1.193072e-02  2.853938e-02  2.507444e-02
## 4-154692      4.728237e-02  1.058200e-02 -5.708435e-03  2.983449e-02
## 4-154710      2.743535e-02  2.983564e-03 -1.511058e-04 -8.928936e-04
## 4-154747      3.208532e-02  8.420681e-03 -1.041834e-03 -2.045499e-03
## 4-154836      6.067905e-02  2.290553e-02 -7.482481e-03  4.526632e-02
## 4-155084     -2.583149e-02  3.519314e-02  3.952625e-02  1.518222e-02
## 4-155094     -4.492102e-02 -2.887713e-02  2.929435e-02  1.076272e-02
## 4-155306     -1.629856e-01 -9.291963e-02  2.420773e-02 -1.355079e-02
## 4-155355     -9.435957e-03 -2.506632e-02 -3.592469e-03  8.143944e-03
## 4-155388      1.006038e-01  2.713721e-02 -1.312343e-02  6.102403e-02
## 4-155394      2.677615e-02 -2.410337e-03 -7.925412e-04 -6.121223e-03
## 4-155415      3.062050e-02 -4.408266e-03 -2.502510e-03 -6.935916e-03
## 4-155485     -4.915149e-02 -2.991239e-02  3.052633e-02  1.029454e-02
## 4-155545      2.677615e-02 -2.410337e-03 -7.925412e-04 -6.121223e-03
## 4-155607     -1.956562e-02  1.212717e-02  1.564479e-02  1.917393e-02
## 4-155656     -3.431480e-02  3.781560e-02  6.352978e-02  1.776128e-02
## 4-155689     -2.267459e-02 -1.087551e-02  2.213512e-02  2.178529e-02
## 4-155767     -1.981285e-02 -3.014714e-04  2.183152e-02  1.356580e-02
## 4-155771      5.619020e-02  1.693978e-02  2.567225e-02 -1.773048e-02
## 4-155773      4.432178e-02  1.480226e-02 -7.229983e-03  3.349926e-02
## 4-155834     -2.519066e-02 -8.317938e-03  3.411421e-02  1.166662e-02
## 4-155843     -9.435957e-03 -2.506632e-02 -3.592469e-03  8.143944e-03
## 4-155856      1.006038e-01  2.713721e-02 -1.312343e-02  6.102403e-02
## 4-155862     -4.128250e-01  6.253213e-02 -1.503045e-01  7.884294e-02
## 4-155866     -9.435957e-03 -2.506632e-02 -3.592469e-03  8.143944e-03
## 4-155958     -6.551355e-03  2.024550e-02  2.113000e-02 -1.326285e-03
## 4-156027     -9.435957e-03 -2.506632e-02 -3.592469e-03  8.143944e-03
## 4-156088     -2.556898e-02 -1.325899e-02  2.424700e-02  1.954554e-02
## 4-156101      2.787824e-02  2.676364e-03 -3.147824e-03  7.801420e-03
## 4-156138     -1.981285e-02 -3.014714e-04  2.183152e-02  1.356580e-02
## 4-156144      4.488119e-03 -2.050649e-02  3.821522e-02 -1.837924e-02
## 4-156224     -2.957821e-02  3.142701e-02  5.016437e-02  2.220254e-02
## 4-156228      3.712929e-02  1.974227e-02  3.457545e-03 -5.672189e-02
## 4-156232     -2.555050e-02  6.473037e-02 -2.778819e-02 -2.983189e-03
## 4-156286     -3.537848e-02  5.214872e-02 -7.509823e-03  1.118410e-03
## 4-156345      3.469444e-02  1.283308e-02 -4.163036e-03  2.547714e-02
## 4-156354     -1.306418e-02 -3.941050e-02  3.440064e-03  2.979056e-02
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## 4-156391     -3.493817e-03 -5.987642e-02  7.398421e-02 -2.919984e-02
## 4-156413     -2.050481e-02 -2.812391e-04  2.258314e-02  1.402772e-02
## 4-156423      4.174569e-03 -1.429174e-02 -4.017162e-02 -1.533541e-03
## 4-156433     -3.733772e-02 -2.016677e-02 -7.791341e-02 -7.076330e-03
## 4-156522      5.438731e-02  1.847085e-02  2.739088e-02 -1.569380e-02
## 4-156646     -1.207198e-02 -6.683785e-03  1.850328e-02 -3.604439e-02
## 4-156672     -3.492084e-01  5.273846e-02 -1.127692e-01  8.820452e-02
## 4-156720      3.509377e-02  7.182208e-03 -3.864138e-03  1.785591e-02
## 4-156756      3.509377e-02  7.182208e-03 -3.864138e-03  1.785591e-02
## 4-156780     -2.319744e-02 -7.601336e-02  8.546993e-02 -1.602886e-02

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## 4-156847 -3.977594e-02 -4.321283e-02 4.146789e-02 -2.587455e-03
## 4-156850 6.609192e-02 2.690725e-02 -1.016924e-02 5.508406e-02
## 4-156887 -2.009752e-02 -7.109158e-03 -5.514031e-02 -8.622369e-03
## 4-156901 9.435637e-03 1.323923e-02 1.956992e-03 -2.000222e-02
## 4-156999 2.651619e-02 -8.322375e-03 8.702683e-04 -4.867897e-02
## 4-157013 1.394177e-01 -7.201434e-03 -2.194616e-02 -6.030975e-02
## 4-157066 4.255805e-02 1.061477e-02 -5.446083e-03 2.583745e-02
## 4-157161 6.926367e-02 1.986123e-02 -9.457808e-03 4.439998e-02
## 4-157162 3.310953e-02 1.303972e-02 -5.279607e-03 2.650717e-02
## 4-157216 -9.435957e-03 -2.506632e-02 -3.592469e-03 8.143944e-03
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## 4-157375 3.300374e-02 -6.529156e-03 3.485176e-03 -2.665755e-02
## 4-157418 -1.385445e-02 -4.734652e-02 5.379541e-03 3.198834e-02
## 4-157475 -9.574923e-03 -3.660741e-02 4.533715e-02 -3.686575e-02
## 4-157498 -2.111858e-02 -3.867359e-02 4.852767e-02 -4.067123e-02
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## 4-164242	5.544727e-02	1.522624e-02	7.101537e-03	-7.860975e-02
## 4-164264	3.399183e-02	1.778719e-02	1.967999e-02	8.495946e-03
## 4-164268	-1.333986e-02	5.339634e-03	1.357164e-02	1.440022e-02
## 4-164308	-3.098028e-02	-1.078306e-02	3.228794e-02	2.600428e-02
## 4-164314	-1.794175e-02	3.166912e-02	-3.516362e-02	-8.069551e-03
## 4-164333	-4.030140e-02	-3.172559e-02	2.452639e-02	1.787152e-02
## 4-164381	-1.560502e-02	-3.876834e-03	4.984272e-03	-5.223199e-03
## 4-164444	3.195751e-01	7.236429e-02	-4.446949e-02	1.786886e-01
## 4-164518	-1.160052e-02	3.616576e-02	5.737972e-02	-4.797577e-03
## 4-164595	1.782218e-01	4.666613e-02	-2.590621e-02	1.140172e-01
## 4-164628	-1.159160e-02	1.739926e-02	-5.319010e-02	-6.288976e-03
## 4-164678	-1.525130e-02	3.546567e-02	2.347193e-02	-9.222496e-04
## 4-164736	-1.942329e-02	3.541645e-04	-2.665804e-02	3.751452e-03
## 4-164749	-1.960348e-02	3.243028e-02	-4.085223e-02	-8.114880e-03
## 4-164813	3.068624e-02	9.284055e-03	3.545433e-03	-5.046027e-02
## 4-164836	-1.870045e-02	1.498560e-04	8.622172e-03	1.239318e-02
## 4-164968	-9.832776e-03	-4.497863e-02	4.950034e-02	-5.990654e-03
## 4-164972	-1.525130e-02	3.546567e-02	2.347193e-02	-9.222496e-04
## 4-164995	2.471651e-02	7.753949e-03	2.836466e-03	-3.268761e-02
## 4-165020	-1.326713e-02	7.850719e-03	-3.728964e-02	-4.497923e-03
## 4-165086	-1.353912e-02	-7.427320e-02	1.183428e-02	3.857219e-02
## 4-165118	-1.525130e-02	3.546567e-02	2.347193e-02	-9.222496e-04
## 4-165128	-1.438995e-02	3.658763e-02	-5.063269e-02	-4.404657e-03
## 4-165132	-2.082802e-02	-4.103390e-02	-1.158661e-02	1.541554e-02
## 4-165136	-2.159728e-03	9.807784e-03	-2.207079e-02	-2.129229e-03
## 4-165163	7.976184e-02	2.940363e-02	-1.087386e-02	6.357178e-02
## 4-165201	-6.936020e-03	-2.645741e-03	1.368625e-02	4.073091e-03
## 4-165286	-1.227723e-02	6.409303e-03	-3.514966e-02	-3.880608e-03
## 4-165342	3.333671e-02	-1.055912e-02	5.417207e-03	-3.411507e-02
## 4-165427	1.391213e-01	2.791352e-02	-1.550589e-02	7.319290e-02
## 4-165451	-1.103323e-02	2.911828e-02	-2.148893e-02	-4.862039e-03
## 4-165500	-1.364792e-02	5.228927e-03	1.406347e-02	1.468787e-02
## 4-165574	4.151879e-02	-1.151169e-02	5.425331e-03	-3.398928e-02
## 4-165647	-2.699358e-02	6.237206e-02	3.002977e-02	1.189425e-02
## 4-165697	-1.185650e-02	-7.270326e-02	-3.176278e-02	-3.089471e-03
## 4-165698	-5.452837e-03	9.128489e-03	-7.122357e-02	-7.163771e-03
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## 4-166056	-1.552432e-02	6.175285e-03	1.651255e-02	1.668829e-02
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## 4-166271	-7.476352e-03	5.912530e-02	3.404928e-02	-2.832257e-02
## 4-166293	-1.490213e-02	5.834439e-03	1.595651e-02	1.604670e-02
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## 4-166884 -1.111223e-02 2.849180e-02 2.385284e-02 1.917249e-04
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## 4-166889 -4.664960e-03 -3.503431e-03 2.724379e-02 1.126254e-02
## 4-166922 -2.333068e-02 5.385028e-02 2.590627e-02 1.104929e-02
## 4-166933 4.634351e-03 1.193013e-02 2.240923e-03 -1.626364e-02
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## 4-168147	-3.173046e-02	7.428356e-02	3.783800e-02	1.112928e-02
## 4-168243	-1.001350e-02	2.314031e-02	1.906052e-02	4.536497e-04
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## 4-168318	-2.014341e-02	-1.037133e-02	2.266709e-02	-3.149682e-02
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## 4-168454	-3.716492e-02	-1.214716e-03	-6.127150e-03	2.246067e-02
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## 4-168929	-1.980178e-02	-2.411714e-02	-1.797906e-02	8.184380e-03
## 4-168933	1.499017e-03	-1.219907e-02	7.789449e-03	-3.136015e-02
## 4-169040	1.759101e-02	-2.796099e-03	-4.369362e-03	-2.291945e-02
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## 4-169249	-1.326076e-03	-1.164940e-02	2.109048e-02	7.166302e-04
## 4-169259	-6.615128e-03	2.231701e-02	2.167348e-02	-2.023491e-03
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## 4-169294	-1.978832e-02	3.029055e-02	5.876685e-02	5.236158e-03
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## 4-169547	-1.766941e-02	4.035664e-02	2.448156e-02	-1.044070e-03
## 4-169602	4.523585e-02	1.191483e-02	-3.944481e-03	2.161284e-02
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## 4-169909	5.085072e-02	1.644415e-02	1.216918e-02	-7.141630e-02
## 4-169931	2.782245e-02	-2.430929e-03	-3.972481e-03	5.073346e-03
## 4-169939	-3.933232e-03	6.116540e-03	1.827550e-02	4.462333e-03
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## 4-170374	-5.765988e-03	-5.524296e-02	6.487333e-02	-1.903899e-02
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## 4-172487 -1.669448e-02 2.127359e-03 2.443382e-02 2.375330e-02
## 4-172713 -6.522529e-03 -3.148734e-02 -2.992626e-04 9.552160e-03
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## 4-172931 6.274805e-03 -9.656436e-02 -1.692814e-02 -2.001834e-02
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## 4-173047 -1.745280e-02 -4.707734e-03 6.891772e-03 -9.267817e-03
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## 4-177494 -1.576108e-02 4.000563e-02 6.193386e-02 6.409656e-03
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## 4-178667	-2.801826e-02	3.023519e-03	1.172227e-02	2.199475e-02
## 4-178790	-2.388368e-02	-4.594173e-02	-1.574614e-02	1.972501e-02
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## 4-178854	-1.442795e-02	-6.542611e-03	1.365867e-02	-2.351608e-02
## 4-178910	-2.194165e-02	-1.052932e-02	-6.241955e-02	-9.205110e-03
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## 4-179023	-1.322380e-02	-1.023328e-02	-3.238882e-02	-7.830679e-03
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## 4-179082	-1.847587e-02	1.186003e-03	2.347539e-02	1.895099e-02
## 4-179083	-1.847587e-02	1.186003e-03	2.347539e-02	1.895099e-02
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## 4-179142	-2.194165e-02	-1.052932e-02	-6.241955e-02	-9.205110e-03
## 4-179157	5.976015e-02	1.454366e-02	-3.476932e-03	1.573523e-02
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## 4-179209	-9.864191e-03	1.559756e-02	-3.816121e-02	-1.273883e-03
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## 4-179286	-2.579258e-02	5.228990e-02	7.966446e-02	2.450484e-03
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## 4-179360_2	-2.710745e-02	-8.274671e-03	-5.179385e-02	-7.549501e-03
## 4-179368	-1.433077e-02	2.154586e-02	2.225811e-02	5.324652e-03
## 4-179388	2.954087e-02	6.157969e-03	1.186361e-04	2.893218e-04
## 4-179416	2.688443e-02	6.782640e-03	-5.889931e-06	6.756058e-04
## 4-179451	-2.050858e-02	-4.953612e-02	-1.445458e-02	1.925592e-02
## 4-179461	-1.505087e-02	2.237224e-02	2.144744e-02	6.575243e-03
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## 4-185802 -9.102251e-03 -6.438570e-03 2.397104e-02 -1.225320e-02
## 4-185854 6.930307e-03 2.779926e-02 4.385875e-03 -2.228352e-02
## 4-185880 -1.044108e-02 1.804931e-02 3.412432e-02 1.154132e-03
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## 4-186029    3.961643e-02  1.227015e-02 -5.178698e-03  2.245733e-02
## 4-186040    4.168018e-02  3.080633e-04 -5.042001e-03  1.259604e-02
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## 4-186049    4.110749e-03  -2.000785e-02 -2.573011e-02 -1.181348e-02
## 4-186077  -1.116755e-02  -8.928821e-03  6.254322e-03  3.635279e-03
## 4-186113    3.508659e-02  -2.066866e-02  1.379818e-03 -7.879056e-02
## 4-186122   -9.976975e-05  4.798670e-03 -4.209799e-02  6.540529e-04
## 4-186189   -1.673053e-02  1.237479e-02  1.533007e-02  1.650627e-02
## 4-186193    1.399040e-02  7.785694e-03  3.244568e-02  5.824887e-03
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## 4-186341   -5.306185e-02  2.604968e-02 -4.036835e-04  3.460242e-02
## 4-186399  -4.823312e-03  -8.741117e-02  1.151500e-02  4.358398e-02
## 4-186416    3.075291e-01  6.993478e-02  2.709118e-02  7.056082e-02
## 4-186474    5.676999e-02  9.968187e-03 -7.981239e-03  3.063887e-02
## 4-186534  -2.159024e-02  5.768341e-02  3.419196e-02  6.368204e-03
## 4-186639  -2.048569e-02  2.990618e-02 -4.703927e-02 -3.504582e-03
## 4-186744  -2.148456e-02  -3.649902e-02  4.245591e-02  6.326156e-03
## 4-186772    5.289763e-03  -9.430927e-02  1.473760e-01 -1.798280e-01
## 4-186773    3.247410e-02  2.335951e-03 -3.724260e-03  6.705025e-03
## 4-186780  -7.946377e-03  1.591077e-02  2.389321e-02  1.136192e-03
## 4-186807  -1.156916e-02  -5.703477e-03 -4.099951e-02 -1.324263e-03
## 4-186821  -3.444358e-02  8.531675e-02  4.895709e-02  1.131745e-02
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## 4-187365  -1.718019e-02  3.656160e-02  5.220221e-02 -1.262156e-03
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## 4-187503    3.623168e-02  7.795890e-03  3.067974e-03 -3.073846e-02
## 4-187516    9.433217e-02  2.934727e-02 -1.311108e-02  6.300767e-02
## 4-187564  -3.657018e-02  -5.223786e-03 -7.640461e-02 -5.260454e-03
## 4-187596  -8.350532e-03  -7.582000e-03 -3.266981e-02 -4.676972e-04
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## 4-187913    4.664167e-02  -4.890001e-03  4.747577e-03 -6.254723e-02
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## 4-188165 2.406776e-02 -5.848522e-03 -5.766268e-03 2.809829e-03
## 4-188210 -5.187858e-03 -2.910502e-02 -8.082342e-04 2.876071e-03
## 4-188225 -2.717017e-02 -1.991204e-02 2.088495e-02 9.360345e-03
## 4-188268 -1.454114e-01 -5.361778e-02 -1.928743e-01 -1.738931e-04
## 4-188354 3.875100e-02 5.232622e-03 -5.267592e-03 1.934887e-02
## 4-188484 -2.701111e-02 -3.618275e-02 3.585698e-02 7.552793e-03
## 4-188507 -4.589335e-02 -3.348661e-02 -7.796097e-02 3.326624e-04
## 4-188522 -2.172960e-02 3.285281e-02 -4.001194e-02 -8.970545e-03
## 4-188571 -1.558042e-02 2.120377e-02 3.367573e-02 8.209786e-03
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## 4-188619 7.495545e-02 2.161622e-02 -9.210814e-03 4.832393e-02
## 4-188627 -2.083557e-02 -2.964473e-02 -1.376029e-02 9.803090e-03
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## 4-188666 -1.086418e-02 -3.331494e-03 -7.234221e-02 -3.242205e-03
## 4-188734 -1.215676e-02 1.286710e-02 1.992491e-02 1.091649e-02
## 4-188762 -2.316203e-02 -3.686259e-02 3.694124e-02 5.238748e-03
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## 4-188851 1.353459e-01 4.508838e-02 3.351449e-02 -7.022495e-02
## 4-188982 -2.176456e-02 -2.067153e-02 2.303196e-02 6.213448e-03
## 4-188982_2 9.044050e-03 -1.167629e-02 6.811600e-04 -4.417532e-02
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## 4-189314 4.094140e-01 8.964282e-02 -3.958197e-02 7.349612e-02
## 4-189343 -4.224861e-02 2.035910e-02 1.366096e-02 3.352616e-02
## 4-189347 -2.344988e-02 -2.138861e-02 2.282457e-02 6.981040e-03
## 4-189453 2.396305e-02 3.788393e-03 1.208415e-03 -1.708698e-02
## 4-189469 1.248218e-01 4.294467e-02 -2.319512e-02 7.396105e-02
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## 4-189499 1.269447e-02 -1.232515e-02 5.391947e-04 -4.989619e-02
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## 4-190627 -2.171255e-02 -4.113973e-03 -4.466112e-02 -1.544153e-03
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## 4-190716 1.179932e-02 -9.897213e-03 2.396645e-03 -2.184586e-02
## 4-190738 -1.660572e-02 -1.254750e-02 1.098468e-02 4.599989e-03
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## 4-190891 -1.618715e-03 -1.326537e-02 2.113901e-02 1.907983e-03
## 4-190915 -2.033298e-02 2.912345e-04 -2.079015e-03 1.284002e-02
## 4-190936 -2.353680e-02 5.539677e-02 3.075073e-02 2.229843e-03
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## 4-191203 -4.633364e-02 -2.606472e-02 -9.816743e-02 -1.055354e-02
## 4-191237 -2.111077e-02 -1.946410e-02 2.240465e-02 6.547577e-03
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## 4-191267 -2.732700e-02 -2.205965e-02 3.004843e-02 1.172933e-02
## 4-191295 -7.351261e-03 1.130914e-02 1.792792e-02 3.275988e-03
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## 4-191305_2 -2.441378e-02 1.031313e-02 9.476853e-03 2.117086e-02
## 4-191322 -2.581178e-02 -5.390769e-03 -5.517448e-02 -5.700425e-03
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## 4-191341 5.991830e-02 1.035102e-02 6.259699e-04 -1.114010e-03
## 4-191354 -7.878939e-03 2.561421e-03 1.523689e-02 9.493432e-03
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## 4-191507 -1.586925e-02 -1.239430e-02 1.056389e-02 5.112426e-03
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## 4-191839 -3.513480e-02 -1.197132e-02 3.231508e-02 3.188071e-02
## 4-191851 -1.964018e-02 9.331389e-03 7.450441e-03 1.759011e-02
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## 4-191914	-1.818221e-02	-1.364215e-02	1.039439e-02	5.862585e-03
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## 4-192107	3.848733e-02	1.219545e-02	-6.110440e-03	2.439623e-02
## 4-192108	-1.050584e-02	1.960342e-02	3.660727e-02	7.338694e-05
## 4-192227	7.131517e-02	1.575066e-02	-9.028283e-03	3.718942e-02
## 4-192249	-3.087083e-03	-1.053715e-02	-4.505883e-02	-1.754477e-03
## 4-192249_2	-1.645243e-02	-9.690518e-02	1.104021e-02	6.068875e-02
## 4-192303	-1.851237e-02	9.218335e-03	7.311710e-03	1.688964e-02
## 4-192361	-2.491872e-02	5.859470e-02	3.218595e-02	1.508735e-03
## 4-192365	5.946902e-03	-8.460482e-03	-4.111666e-03	-2.976901e-02
## 4-192378	-1.730422e-02	-8.083023e-03	-4.895491e-02	-6.408504e-03
## 4-192486	6.907238e-02	2.001927e-02	-9.215710e-03	4.954065e-02
## 4-192545	9.817501e-02	2.591932e-02	6.966064e-03	-6.036572e-02
## 4-192556	6.103610e-03	-9.796651e-03	4.231183e-03	-3.832805e-02
## 4-192679	4.669503e-03	7.060369e-03	1.192248e-02	-1.990197e-02
## 4-192682	2.329232e-02	-5.602771e-03	2.096903e-03	-2.017399e-02
## 4-192737	-1.871937e-02	1.273224e-02	8.243749e-03	1.861901e-02
## 4-192738	3.556678e-03	-1.854239e-02	-2.550807e-02	-9.050195e-03
## 4-192744	-1.871937e-02	1.273224e-02	8.243749e-03	1.861901e-02
## 4-192771	-1.063388e-02	-4.788535e-03	-4.346492e-02	-3.962819e-03
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## 4-192978	1.105769e-02	9.781319e-03	1.447396e-02	-2.688458e-02
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## 4-193062	-7.548376e-03	-4.945784e-03	-3.048474e-02	-4.283234e-03
## 4-193091	1.526553e-02	-7.311124e-02	-2.502324e-02	-2.781419e-02
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## 4-193170	-2.589986e-02	5.368175e-02	4.206225e-02	8.202178e-03
## 4-193197	3.907610e-03	-3.107163e-02	5.476563e-02	-2.310092e-02
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## 4-193690 -2.254889e-02 -1.504877e-02 -4.168471e-02 2.991427e-03
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## 4-193987 -1.844803e-02 4.320695e-02 2.908270e-02 -2.366629e-03
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## 4-196996   -2.211891e-02  5.204742e-02  2.372421e-02  9.154596e-03
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## 5-208193	-1.132692e-02	-2.173965e-03	1.275163e-02	1.010752e-02
## 5-208202	7.435234e-03	-2.533819e-02	-5.554718e-02	-2.921390e-03
## 5-208295	-1.493043e-02	3.749666e-02	-2.711524e-02	-7.111637e-03
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## 5-208311	-1.382745e-01	-2.691033e-01	1.359464e-01	7.473029e-02
## 5-208332	-2.998968e-02	-1.159385e-02	-8.089411e-02	-1.077039e-02
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## 5-208394	3.690337e-02	2.701045e-03	-6.019932e-05	-2.874488e-03
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## 5-208589	-3.745579e-02	-9.036178e-03	3.781585e-02	3.181055e-02
## 5-208594	-1.012280e-02	2.651168e-02	3.099892e-02	-4.519964e-03
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## 5-208920	3.404308e-02	2.166828e-02	1.820646e-02	-8.142455e-02

## 5-209066	9.159370e-03	2.119791e-02	1.263449e-03	-2.733881e-02
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## 5-209424	6.422624e-02	1.358728e-02	-6.088762e-04	6.884748e-03
## 5-209538	2.735179e-02	-1.118013e-02	1.746248e-03	-2.760005e-02
## 5-209572	-4.504443e-02	5.504444e-02	-9.624499e-02	-1.528325e-02
## 5-209668	-2.035476e-02	5.145971e-02	-3.951542e-02	-9.460015e-03
## 5-209680	-9.454626e-03	-5.664207e-02	7.149214e-02	-2.268330e-02
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## 5-209805	-7.724525e-03	1.228994e-02	-5.543967e-03	-1.464850e-03
## 5-209859	-4.487871e-02	5.830088e-02	-8.668722e-02	-1.548218e-02
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## 5-209962	-1.451569e-02	-2.662321e-02	-1.292620e-02	1.110528e-02
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## 5-210004	-1.087130e-03	-1.262659e-02	-7.421146e-02	-2.210731e-03
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## 5-210371	1.857397e-02	1.151466e-02	-8.203259e-03	-2.471730e-03
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## 5-210917	-3.056632e-02	-1.232893e-02	-8.381645e-02	-1.111628e-02
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## 5-211144	1.100784e-02	-1.024196e-02	-1.746786e-03	-5.075426e-02
## 5-211187	9.692054e-02	1.945246e-02	-1.247465e-02	4.863300e-02
## 5-211260	9.653547e-03	-1.434321e-02	1.659120e-03	-3.187567e-02
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## 5-215653	-5.063115e-03	-2.075829e-02	3.498953e-02	-2.054218e-02
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## 5-215759	-1.057445e-01	2.256668e-01	-5.467854e-02	-7.606766e-03
## 5-215770	-2.946341e-03	9.857112e-03	-2.087348e-02	-3.032188e-03
## 5-215865	-9.667028e-03	1.868888e-02	-2.929419e-02	-3.811507e-03
## 5-215928	-1.914712e-02	-3.316002e-04	-1.684681e-03	1.020047e-02
## 5-215933	-4.398329e-03	-2.349841e-02	3.629921e-02	-2.087773e-02
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## 5-216009	-3.129959e-02	-1.143127e-02	-9.945293e-02	-9.874093e-03
## 5-216051	-2.286700e-02	5.553906e-02	4.609030e-02	-5.617419e-03
## 5-216064	4.824104e-02	-1.323417e-02	7.106829e-03	-4.185151e-02
## 5-216088	-1.657940e-02	2.577460e-02	4.820646e-02	1.639657e-02
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## 5-216227	-3.828310e-02	-1.813837e-02	4.600590e-02	2.515320e-02
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## 5-216296	-5.517400e-03	-2.065009e-02	3.596571e-02	-2.605883e-02
## 5-216386	-4.157545e-02	-4.407055e-02	-1.951006e-02	-5.324994e-04
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## 5-223120 -2.761030e-02 1.827570e-02 2.574283e-02 2.319053e-02
## 5-223184 1.001257e-01 -1.563334e-02 -1.182451e-02 -1.969025e-02
## 5-223191 -5.447911e-02 -2.137740e-02 8.759229e-02 1.162432e-02
## 5-223254 -2.318531e-02 -1.646858e-02 1.841362e-02 1.225402e-02
## 5-223273 -5.921526e-03 1.777491e-05 5.129408e-04 -9.109917e-03
## 5-223282 -5.860802e-02 2.655068e-02 5.816897e-02 4.457076e-02
## 5-223319 -4.808736e-03 8.976392e-03 1.685586e-02 3.790803e-03
## 5-223368 6.314987e-03 -2.359011e-03 1.972832e-02 -1.428837e-02
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## 5-223473    1.728230e-03 -1.021474e-02 -3.327320e-02 -1.090734e-03
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## 5-223569   -2.612146e-02 -2.110093e-02 -4.198519e-02  4.254703e-03
## 5-223637   -5.907512e-04  1.239284e-04 -2.968932e-02 -1.864506e-03
## 5-223704   -9.457475e-03 -4.045444e-02  7.368926e-03  2.527685e-02
## 5-223723   -7.853250e-02 -4.593039e-02 -1.537417e-01 -7.141912e-03
## 5-223890    1.065330e-01  3.326025e-02 -1.480360e-02  7.581059e-02
## 5-223914   -2.549336e-02 -1.316454e-02  2.215224e-02  2.563014e-02
## 5-223983    2.331194e-01  2.595088e-01 -1.783946e-02 -7.593715e-02
## 5-223996   -4.964087e-04  3.685245e-02  1.882396e-02 -2.713105e-02
## 5-224028   -1.280752e-03  1.310500e-03 -2.977749e-02 -1.842377e-03
## 5-224044    1.069641e-01  2.665835e-02  6.822020e-03 -9.914363e-02
## 5-224056   -4.187432e-02 -3.245865e-02 -8.185693e-02 -3.545445e-03
## 5-224099   -6.536833e-03  2.407158e-02  2.347210e-02 -1.816771e-03
## 5-224106   -1.924470e-02  1.412294e-03 -1.522746e-03  1.051786e-02
## 5-224124    1.699301e-01  1.592307e-01 -4.768944e-03  1.345106e-02
## 5-224133   -1.579654e-02  3.589082e-02 -2.168508e-02 -7.818854e-03
## 5-224184   -2.549336e-02 -1.316454e-02  2.215224e-02  2.563014e-02
## 5-224221    2.423332e-02 -5.169311e-03  3.618886e-03 -2.365847e-02
## 5-224374    4.397587e-02  1.794417e-02 -6.805844e-03  3.861572e-02
## 5-224464   -1.924470e-02  1.412294e-03 -1.522746e-03  1.051786e-02
## 5-224518   -4.938001e-01  6.507214e-02  1.431509e-01  1.518702e-02
## 5-224586   -1.075347e-02 -1.729585e-02 -8.963142e-03  4.824014e-03
## 5-224595   -8.753767e-03  5.975623e-02  6.635902e-02 -2.282685e-02
## 5-224632   -1.045731e-02  2.546691e-02 -2.581904e-02 -2.304416e-03
## 5-224648    2.934256e-02  6.455210e-03 -7.434141e-04  5.145670e-03
## 5-224731   -5.702622e-02  4.180891e-02  5.388437e-02  5.150481e-02
## 5-224732   -5.430950e-03 -2.042616e-02 -4.605468e-02 -6.540602e-03
## 5-224742   -1.976814e-03  3.924589e-03 -3.061108e-02 -1.659800e-03
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## 5-224759   -1.202441e-03 -9.617383e-03  1.994130e-02  8.791488e-04
## 5-224785    2.719928e-03 -1.000294e-02  2.224883e-03 -2.686700e-02
## 5-224809   -2.775253e-02 -1.556659e-02  4.556306e-02 -3.043365e-02
## 5-224816    8.554206e-04 -3.588149e-02 -1.464716e-02 -7.961184e-03
## 5-224819   -2.089639e-02 -8.172252e-03 -5.619076e-02 -7.151353e-03
## 5-224834   -2.131260e-02  3.167973e-02 -5.595478e-02 -1.291438e-02
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## 5-224928    8.734812e-02  2.089654e-02 -1.371524e-02  5.056260e-02
## 5-224949   -1.577496e-02  1.865474e-02 -4.300515e-02 -8.524315e-03
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## 5-225344_2 -2.612934e-02 -9.144753e-03 9.296023e-03 1.551187e-02
## 5-225359 -3.643064e-01 -1.089104e-02 -1.866604e-01 6.307177e-03
## 5-225521 -1.486764e-02 -1.933347e-02 -1.246378e-02 9.772674e-03
## 5-225573 -1.369844e-02 1.249781e-02 2.390748e-02 9.842767e-03
## 5-225611 -1.466116e-02 -7.148575e-03 -4.285775e-02 -6.640602e-03
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## 5-225625 2.668406e-03 -1.987171e-02 -5.282076e-02 -1.237637e-03
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## 5-225908 -2.099993e-02 -2.856447e-02 -1.551372e-02 1.012705e-02
## 5-225954 -1.922586e-02 -1.037847e-02 2.877304e-02 -3.518472e-02
## 5-226009 -1.241178e-02 -1.067625e-02 -3.276320e-02 -9.182375e-03
## 5-226036 -2.128581e-03 -3.152725e-02 2.481315e-05 5.537248e-04
## 5-226041 3.974076e-02 1.928874e-02 -6.220524e-03 3.971890e-02
## 5-226111 -1.150171e-02 9.547600e-03 2.114372e-02 5.792397e-03
## 5-226119 -4.071846e-03 6.999229e-03 -3.358543e-02 -1.338763e-03
## 5-226130 -8.462983e-03 3.884926e-03 -4.550528e-02 -4.119099e-03
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## 5-226154 -1.244403e-02 -2.139818e-02 2.001220e-02 -6.303166e-03
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## 5-226373 -2.306485e-02 -1.460731e-02 -2.642617e-02 -1.205151e-02
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## 5-226397 -1.945950e-01 3.087832e-01 2.378852e-02 -1.673448e-02
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## 5-226510 -1.003875e-02 1.831773e-02 2.723863e-02 5.214332e-03
## 5-226589 4.178549e-02 -3.303337e-02 -6.704089e-02 -4.667669e-02
## 5-226715 -3.231619e-03 6.410342e-03 -3.167822e-02 -1.918824e-03
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## 5-227304 2.114566e-02 7.010472e-03 1.555874e-03 -3.238634e-02
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## 5-227547 -1.950943e-02 4.436518e-02 2.477358e-02 -1.344161e-03
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## 5-227577 -1.172108e-02 1.188759e-02 2.478163e-02 7.500752e-03
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## 5-227676 6.234555e-03 2.415755e-02 -3.277700e-03 -3.164071e-02
## 5-227790 -1.588533e-02 -6.395610e-02 8.405451e-02 -9.485950e-03
## 5-227793 -1.585761e-02 1.060868e-02 3.035542e-02 1.234142e-02
## 5-227802 -4.350737e-02 2.552203e-02 4.138578e-02 3.660863e-02
## 5-227854 5.055608e-02 1.040860e-02 -5.354323e-03 1.449336e-02
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## 5-228131 -1.273565e-02 -3.358538e-02 2.472314e-03 2.814291e-02
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## 5-228257 6.793306e-02 2.276371e-02 7.276804e-03 -8.313708e-02
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## 5-228317 -1.477956e-02 1.849617e-02 -2.843677e-02 -2.946273e-03
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## 5-228786 -2.949796e-02 6.520648e-02 3.489593e-02 4.504618e-03
## 5-228786_2 -1.874255e-02 -9.939098e-04 4.302550e-03 1.397219e-02
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## 5-228896 5.128537e-03 -1.129817e-02 -2.441174e-03 -5.425676e-02
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## 5-229443 -7.774613e-03 2.727151e-02 2.658822e-02 -1.228222e-03
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## 5-229679 1.823552e-02 1.100285e-02 -8.171935e-03 5.690471e-03
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## 5-229733 -1.961652e-02 -1.029449e-02 -5.961486e-02 -9.607442e-03
## 5-229835 -3.281259e-02 7.002305e-02 3.581143e-02 7.309129e-03
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## 5-229941 -1.378470e-02 -7.599781e-03 2.301349e-03 -3.910876e-03
## 5-229942 -1.162910e-01 -6.104002e-02 -2.083281e-01 -2.833568e-02
## 5-229981_2 2.658080e-01 3.191563e-02 -2.580859e-02 -5.356808e-02
## 5-230013 -9.101789e-03 3.456456e-03 -4.431910e-02 -2.917248e-03
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## 5-230104 2.266329e-02 1.945056e-03 1.254664e-03 -1.318012e-02
## 5-230125 5.252064e-02 6.706522e-03 -8.392879e-03 2.711587e-02
## 5-230139 -5.109879e-02 -1.139453e-02 -1.225579e-01 -1.402720e-02
## 5-230193 2.880803e-02 9.837199e-03 -5.855951e-03 -6.887333e-03
## 5-230218 -8.995366e-03 6.864869e-03 -8.362470e-03 7.198852e-03
## 5-230254 -3.281259e-02 7.002305e-02 3.581143e-02 7.309129e-03
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## 5-231156 -3.675046e-03 -3.064344e-02 2.432633e-02 -6.924469e-03
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## 5-231345 -1.424955e-02 -4.673059e-03 1.634089e-02 1.131469e-02
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## 5-231816    7.122011e-03  1.210422e-02 -1.306833e-03 -2.091581e-02
## 5-231904   -1.458462e-02 -7.197993e-03  7.682961e-03  1.780928e-04
## 5-231915    6.198444e-02 -1.276486e-02  2.545394e-03 -7.427490e-02
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## 5-232800    4.408734e-02  1.635063e-02 -8.275013e-03  1.953880e-02
## 5-232820    3.771711e-03 -2.116242e-02 -4.163848e-02 -1.219262e-02
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## 5-233426     -7.232265e-03 -1.992557e-02  2.159177e-02 -3.443908e-04
## 5-233464      4.329731e-02 -1.056084e-02  4.076569e-03 -5.995973e-02
## 5-233580     -1.073929e-02  1.275333e-02  2.551232e-02  8.309016e-03
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## 5-233813     -6.632487e-03  1.535773e-02  2.659488e-02 -2.145291e-03
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## 5-234281     -1.040988e-02  2.801539e-02 -2.169922e-02 -4.375826e-03
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## 5-236575	4.364236e-02	9.794142e-03	-5.402446e-03	2.767739e-02
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## 5-236688_2	2.169685e-03	-4.614330e-02	-2.276821e-02	-1.008445e-02
## 5-236696	3.250977e-02	1.047985e-02	7.115191e-03	-5.895091e-02
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## 5-237802 -9.119676e-04 -1.457969e-02 4.525733e-03 -3.526388e-02
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## 5-237930 -1.151488e-02 2.883449e-02 -1.941111e-02 -3.158994e-03
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## 5-237989 -1.538502e-02 -1.461829e-02 1.439330e-02 -9.774036e-03
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## 5-240312 -2.309291e-02 8.158941e-03 1.563389e-02 1.722359e-02
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## 5-242300	3.426000e-02	6.512945e-03	-1.186554e-03	7.226033e-03
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## 5-242479	-2.795048e-03	2.155491e-02	3.987977e-02	-2.499861e-02
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## 5-242515	1.657028e-02	8.638888e-03	4.052903e-03	-4.601192e-02
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## 5-242561	-1.639973e-02	-9.968877e-03	1.143298e-02	2.094948e-03
## 5-242568	-2.466788e-02	5.551810e-02	2.630435e-02	9.767452e-03
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## 5-242677	-2.604472e-02	7.950988e-04	-4.386202e-03	1.837002e-02
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## 5-242948	-1.678021e-02	-1.098154e-02	2.176116e-02	8.324568e-03
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## 5-243123	2.341628e-02	5.255951e-03	2.004057e-03	-1.719321e-02
## 5-243181	9.452354e-03	1.234584e-02	-3.397889e-04	-2.240430e-02
## 5-243186	4.484580e-03	2.472627e-02	4.574801e-03	-1.881636e-02
## 5-243233	-5.061929e-02	-1.737961e-01	-3.142051e-02	5.791019e-02
## 5-243317	-1.568456e-02	3.246559e-03	4.728201e-03	1.274105e-02
## 5-243377	3.096377e-03	-1.540219e-02	3.043255e-02	-1.325527e-02
## 5-243404	9.649222e-02	1.135764e-01	2.667516e-02	1.398389e-01
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## 5-243560	2.999104e-02	-4.095573e-03	-1.687273e-03	-7.680906e-03
## 5-243645	9.009387e-03	-5.735117e-03	-1.918975e-03	-3.597144e-02
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## 5-243865	-5.022842e-02	1.451025e-01	1.351337e-01	-2.466700e-02
## 5-243873	2.999104e-02	-4.095573e-03	-1.687273e-03	-7.680906e-03
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## 5-244061	4.455462e-02	1.794387e-02	-7.031823e-03	3.673157e-02
## 5-244083	2.889306e-02	-3.761515e-03	-1.395560e-03	-7.988048e-03
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## 5-245941 -3.872870e-03 -7.058204e-02 1.097943e-02 3.449842e-02
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## 5-249239     -1.450183e-01 -5.472246e-02 -1.849696e-01  2.002433e-02
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## 5-249295     -8.943903e-03  8.878922e-03  2.088171e-02  7.262038e-03
## 5-249301     -3.937183e-03 -2.347442e-02  1.972941e-02 -8.208613e-03
## 5-249346     -2.187221e-02 -8.008304e-03  4.885364e-03  1.357812e-02
## 5-249467     -1.985004e-02 -5.666051e-03 -5.108301e-02 -6.162852e-03
## 5-249492      7.656934e-02  1.919500e-02  7.168052e-03 -5.024553e-02
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## 6-251792	-5.260755e-03	-2.018008e-02	2.152381e-02	-9.994276e-03
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## 6-252063	-3.045859e-02	-1.671089e-02	2.730629e-02	2.080680e-02
## 6-252071	-2.485469e-04	-1.596821e-02	-5.329574e-02	-3.765737e-03
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## 6-252156	-4.095188e-02	-2.131657e-02	1.605708e-02	2.316014e-02
## 6-252170	7.965774e-02	1.140583e-02	-9.478524e-03	2.376534e-02
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## 6-253102	-4.922041e-03	1.164088e-02	-4.605095e-02	-1.511257e-03
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## 6-255786 -3.715894e-02 -1.908640e-02 -8.359943e-02 -1.592286e-02
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## 6-260072	7.217674e-03	1.581165e-03	4.675965e-03	-3.024314e-02
## 6-260102	7.217674e-03	1.581165e-03	4.675965e-03	-3.024314e-02
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## 6-261033	-1.842038e-02	1.970703e-03	5.809007e-03	1.540005e-02
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## 6-261165	-1.997631e-02	-2.933733e-04	2.141683e-02	1.438516e-02
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## 6-261993	4.420996e-02	6.931021e-03	-6.043480e-03	2.615953e-02
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## 6-262295	-4.896674e-03	-1.318891e-02	2.377552e-02	5.887254e-03
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## 6-262502	-2.551283e-02	5.334582e-02	-5.264017e-02	-1.436606e-02
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## 6-262717	-2.445704e-02	-3.434759e-02	-1.654915e-02	1.503774e-02
## 6-262756	-1.176803e-02	-3.418088e-03	7.755240e-03	-1.918434e-03
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## 6-272137	-1.950130e-02	-3.219313e-02	-2.381381e-02	-4.020632e-05
## 6-272152	4.505815e-01	-2.567702e-01	1.277714e-01	2.877280e-02
## 6-272174	-2.548702e-02	5.139863e-03	4.921756e-03	1.983593e-02
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## 6-272247	1.561192e-02	-1.623127e-02	2.132331e-03	-2.901243e-02
## 6-272286	-1.356533e-02	-1.321363e-02	-2.243315e-02	-3.219557e-03
## 6-272305	-4.052271e-02	-4.116698e-02	4.204357e-02	-4.471319e-03
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## 6-272355	-1.978064e-02	-1.497327e-02	-4.314973e-02	-4.703147e-03
## 6-272370	-4.173628e-03	1.341800e-02	-4.265320e-02	-4.789903e-03
## 6-272373	-1.034892e-02	5.170366e-03	1.751500e-02	1.080345e-02
## 6-272387	2.141730e-02	-1.126940e-02	1.585844e-03	-8.380094e-02
## 6-272572	1.190271e-02	1.147287e-02	-1.383572e-03	-2.388562e-02
## 6-272601	1.642139e-02	-1.685617e-02	1.996420e-03	-2.962617e-02
## 6-272602	-7.646320e-03	2.211436e-02	-5.311003e-02	-6.618345e-03
## 6-272624	7.837009e-02	2.278924e-02	-1.160878e-02	5.284779e-02
## 6-272654	3.755701e-02	5.900124e-03	1.558841e-03	-1.534795e-02
## 6-272692	4.216855e-02	-1.376157e-02	3.284244e-03	-3.884308e-02
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## 6-272733	-8.818245e-03	2.297775e-02	2.209981e-02	4.822648e-04
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## 6-272750	-2.541965e-02	4.096080e-02	-1.094037e-01	-1.685943e-02
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## 6-276496	6.995286e-02	1.068509e-02	-2.075403e-02	3.707435e-02
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## 6-291693	-6.809630e-03	-1.988909e-04	-3.695525e-02	-2.845271e-03
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## 6-291710	1.270499e-02	6.642529e-03	4.378850e-03	-3.595133e-02
## 6-291714	-3.723394e-02	-1.632782e-02	4.787587e-02	7.645549e-03
## 6-291806	-7.587637e-03	2.307016e-02	2.904666e-02	-4.356689e-03
## 6-291812	-1.466882e-02	-9.422428e-03	1.071310e-02	9.129338e-04
## 6-291946	-1.396086e-02	-1.501610e-02	1.719870e-02	5.631798e-04
## 6-291986	8.328505e-03	1.280286e-02	-1.191354e-03	-2.286617e-02
## 6-292001	-2.622615e-02	-3.443286e-02	-1.959821e-02	2.132049e-02
## 6-292011	-3.282379e-01	1.240718e-01	-2.416037e-02	-1.974620e-01
## 6-292028	2.208025e-02	-1.138612e-02	-2.597625e-03	-8.182443e-02
## 6-292029	2.010645e-02	1.265997e-02	6.146571e-03	-5.941282e-02
## 6-292041	-6.627429e-03	-4.026988e-03	2.763670e-02	9.393240e-03
## 6-292081	-9.918919e-03	6.275236e-03	1.551112e-02	1.364162e-02
## 6-292094	2.122171e-02	-6.513928e-03	-8.129875e-04	-5.979640e-03
## 6-292099	-7.859898e-03	-4.247374e-02	4.119810e-02	-5.595900e-03
## 6-292147	-1.592230e-02	-9.171190e-03	1.100990e-02	2.338774e-03
## 6-292162	-1.719600e-02	-9.039870e-03	-5.067373e-02	-7.233284e-03
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## 6-292265	-7.764647e-03	-5.448655e-02	6.290615e-03	1.142465e-02
## 6-292284	1.750967e-02	6.983296e-03	9.258700e-04	-2.917012e-02
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## 6-292396	1.359679e-02	-1.810748e-02	4.339250e-04	-4.104854e-02
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## 6-293313 -2.847295e-02 5.214517e-02 6.832276e-02 9.458550e-03
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## 6-297806     -4.255500e-02 -2.757168e-02 -7.350464e-02  3.014218e-03
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## 6-298026      2.558746e-02  3.552918e-03  2.879078e-03 -1.531364e-02
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## 6-298093      4.737857e-02 -8.977338e-03  4.299107e-04 -5.709281e-02
## 6-298173     -1.303983e-02  5.849103e-03  1.160924e-02  1.383818e-02
## 6-298234     -1.115160e-02  2.115966e-02 -2.808925e-02 -4.339756e-03
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## 6-298723      2.496825e-02  6.749668e-03  2.459481e-03 -3.344191e-02
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## 6-299665	1.562474e-02	-1.848061e-04	-2.321581e-03	-3.681930e-02
## 6-299669	4.301865e-02	1.193600e-02	-4.519890e-03	2.305232e-02
## 6-299716	-2.290998e-02	-9.986740e-03	2.091439e-02	2.066089e-02
## 6-299732	-7.975452e-03	6.896979e-03	2.442142e-02	7.167591e-03
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## 7-301198	4.834798e-03	-2.041035e-02	-2.118115e-02	-1.219814e-02
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## 7-301286	-2.247019e-02	2.208214e-02	-6.219283e-02	-1.022492e-02
## 7-301297	-2.208094e-02	5.069458e-02	2.460868e-02	1.004967e-02
## 7-301325	3.484213e-02	-2.742012e-02	-3.864182e-03	-8.172652e-02
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## 7-301419	3.349227e-02	-2.598204e-02	-4.141758e-03	-7.576718e-02
## 7-301456	-2.159536e-02	5.533815e-02	-4.000541e-02	-5.478184e-03
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## 7-302442	-2.286997e-02	7.760546e-03	1.147095e-02	2.162942e-02
## 7-302450	1.026568e-02	2.059513e-02	-3.581951e-03	-2.521250e-02
## 7-302451	-1.924607e-01	2.718771e-01	-3.342017e-02	4.727416e-02
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## 7-310108 -2.036561e-02 2.477262e-02 -4.481544e-02 -1.985272e-03
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## 7-310615      9.606371e-04 -2.221881e-02 -3.512281e-02 -1.131103e-02
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## 7-310765      4.882983e-02  1.143095e-02 -5.871817e-03  2.534690e-02
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## 7-311353      3.652845e-02  2.455943e-05  6.496811e-03 -5.124754e-02
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## 7-312939      6.212333e-02  1.601720e-02 -5.287207e-03  3.012084e-02
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## 7-313220 9.092262e-02 2.046330e-02 -1.178888e-02 4.851521e-02
## 7-313236 -2.909641e-02 -6.907914e-03 -7.211145e-02 -1.020474e-02
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## 7-313369 -5.594805e-03 -1.846926e-03 -1.071287e-03 -1.878800e-02
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## 7-320304 -1.207849e-02 2.257761e-02 2.097857e-02 1.361897e-03
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## 7-320450 2.411072e-02 -9.981990e-03 -3.557574e-03 -1.164208e-02
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## 7-320542 -2.548320e-02 5.377575e-02 3.623543e-02 2.585033e-03
## 7-320558 -1.354888e-02 3.114750e-02 -4.865330e-02 -7.619736e-03
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## 7-320740 2.273475e-02 3.392268e-03 1.940156e-03 -1.571159e-02
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## 7-320885 -4.282521e-03 -7.883381e-03 2.856290e-02 -1.605511e-02
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## 7-320919 -1.191162e-01 -3.288320e-01 2.959157e-02 8.322466e-02
## 7-320954 -1.293063e-02 2.064214e-02 -2.257478e-02 -6.154676e-03
## 7-320999 4.402396e-02 2.234511e-02 -1.196692e-02 1.831326e-02
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## 7-321096 -8.320531e-03 1.518318e-02 2.256306e-02 6.724742e-03
## 7-321109 -3.811925e-02 -1.402535e-02 8.157701e-03 -2.394647e-03
## 7-321230 -9.616668e-03 2.289101e-02 3.934990e-02 4.501591e-04
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## 7-321351 -3.484158e-02 2.357998e-03 -2.530024e-03 2.523098e-02
## 7-321357 -1.876738e-03 -1.877899e-03 -2.672217e-02 -1.144309e-03
## 7-321369 1.386574e-01 2.871368e-02 -1.769378e-02 7.096421e-02
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## 7-321944 -2.336272e-02 -1.185149e-02 -5.601679e-02 -1.007238e-02
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## 7-323366     -1.030954e-02 -2.710825e-02 -5.073622e-03  1.079117e-02
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## 7-323496      1.122934e-02 -7.896739e-03 -8.019908e-04 -4.239403e-02
## 7-323569     -2.803699e-02  6.457327e-02  3.073387e-02  1.244376e-02
## 7-323675     -4.131249e-02 -1.780490e-01  7.641914e-04  9.331630e-02
## 7-323683     -1.129129e-02  2.569509e-02 -2.923828e-02 -1.109486e-02
## 7-323714     -3.610428e-03 -1.123678e-02  4.700039e-02 -1.828723e-02
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## 7-323926     -8.632523e-03  2.689685e-02  2.980254e-02 -6.066256e-05
## 7-323958      5.738785e-03  2.949611e-02 -8.059546e-04 -3.461982e-02
## 7-323961     -6.601385e-03  1.145370e-02  2.369046e-02  4.205200e-03
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## 7-324447     -5.438120e-03  8.386031e-03  2.114504e-02  2.979816e-03
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## 7-324552     -1.091827e-02 -2.444588e-02 -5.738680e-03  1.145090e-02
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## 7-325201 -6.397614e-03 4.391687e-03 2.922250e-02 1.115853e-02
## 7-325239 2.261903e-01 4.387085e-02 -3.173710e-02 1.168965e-01
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## 7-325255 -3.946675e-03 1.065762e-03 1.955335e-02 6.832293e-03
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## 7-327705 -1.220574e-02 -1.348067e-02 2.202748e-02 -2.163836e-02
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## 7-335003 -1.864561e-02 2.362816e-03 -2.421358e-03 1.228228e-02
## 7-335012 -9.833369e-03 5.213891e-03 2.450393e-02 1.699205e-02
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## 7-335054 -7.777296e-04 -1.241190e-02 1.418582e-02 -6.337705e-02
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## 7-335084 -6.557714e-03 1.475734e-02 -3.747374e-02 -5.703678e-03
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## 7-335128 1.698188e-01 4.902113e-02 -2.364645e-02 1.108676e-01
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## 7-335997	8.207293e-02	1.288173e-02	-9.997909e-03	3.978417e-02
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## 7-337586	-3.143116e-02	-7.481765e-03	3.294971e-02	2.624157e-02
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## 7-338138	6.838734e-02	2.138682e-02	5.813863e-03	-5.891133e-02
## 7-338172	-1.260607e-02	2.315286e-02	-2.714765e-02	-7.623944e-03
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## 7-342822	-7.244061e-03	-2.543307e-02	2.575655e-02	-1.590048e-02
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## 7-342912	-5.738252e-03	9.746466e-03	-2.658642e-02	-1.269353e-03
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## 7-343354	8.357028e-03	1.052205e-02	3.169443e-03	-1.597824e-02
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## 8-350802      -1.292666e-02  8.997966e-03 -3.184603e-02 -4.555266e-03
## 8-350845      -1.560402e-02  3.622654e-02 -3.023995e-02 -5.724556e-03
## 8-350894      -1.931085e-02  1.178582e-02 -6.960531e-02 -4.058738e-03
## 8-350943      3.876282e-04  5.164061e-03  1.901992e-02 -1.038976e-02
## 8-350985      -1.384928e-02  1.138347e-02  8.386206e-03  1.224703e-02
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## 8-351109      -2.143918e-02 -7.567880e-03 -9.245925e-04 -3.991424e-03
## 8-351396      5.242151e-02  1.161407e-02 -6.820978e-03  2.589394e-02
## 8-351421      -2.144345e-02 -5.435242e-02  1.190069e-01 -6.373697e-02
## 8-351486      1.933599e-02  1.210585e-02  1.885417e-02 -1.647457e-02
## 8-351550      -2.848330e-02  2.892609e-02  2.837702e-02  1.707937e-02
## 8-351696      -8.289505e-03 -1.459989e-02  2.623060e-02 -2.092047e-02
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## 8-351730 -2.930486e-02 2.849204e-02 2.871098e-02 1.730818e-02
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## 8-351811 -8.289505e-03 -1.459989e-02 2.623060e-02 -2.092047e-02
## 8-351875 -3.868840e-02 9.021386e-02 4.561153e-02 1.898182e-03
## 8-351917 -2.498596e-02 7.363800e-03 1.183584e-02 2.229993e-02
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## 8-352025 2.702430e-02 -3.274798e-03 2.447669e-03 -4.262196e-02
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## 8-352102 1.979740e-01 3.688901e-02 -2.608588e-02 1.022651e-01
## 8-352129 -5.841941e-03 -5.896077e-03 2.046548e-02 -3.550470e-03
## 8-352147 2.880185e-03 -1.033780e-02 -3.008244e-02 -1.299483e-03
## 8-352171 -6.660018e-03 -5.547947e-03 1.376796e-02 -9.801261e-03
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## 8-352265 -2.869356e-02 -1.058483e-02 1.777668e-03 -2.949381e-03
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## 8-352529 -9.153222e-03 -2.609175e-02 -3.090346e-03 8.145724e-03
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## 8-352614 -3.324840e-02 -2.026901e-02 1.862015e-02 -1.397330e-02
## 8-352625 -1.606096e-02 4.400653e-02 3.404015e-02 -3.029100e-05
## 8-352862 6.295557e-02 -1.448502e-02 -1.520332e-02 -3.067431e-02
## 8-352886 -2.288115e-02 3.804091e-02 2.853312e-02 4.365876e-03
## 8-352890 2.759340e-02 3.737981e-03 -3.192102e-02 5.019351e-03
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## 8-353527 -1.754792e-02 -7.241149e-03 -4.431722e-02 -7.727919e-03
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## 8-353627 1.515584e-02 -2.085319e-02 2.578380e-03 -5.182885e-02

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## 8-353722	-2.504921e-02	5.707184e-02	4.413488e-02	-3.395604e-03
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## 8-353771	6.457563e-02	2.167992e-02	-1.197971e-03	4.920569e-03
## 8-353856	1.836478e-02	-1.605499e-02	-7.497904e-03	-3.148400e-02
## 8-353877	-9.748423e-03	7.019503e-03	3.654452e-02	1.393346e-02
## 8-353981	-9.284898e-03	-2.243613e-02	1.927301e-02	-5.118849e-03
## 8-354004	-8.379960e-03	2.536938e-02	2.942668e-02	-2.127582e-03
## 8-354053	-1.003304e-02	-2.570204e-02	-3.876793e-03	8.352653e-03
## 8-354066	-8.024413e-03	-5.688320e-03	-3.305821e-02	-2.790010e-03
## 8-354069	-1.432913e-02	7.322244e-03	-4.133798e-02	-5.313262e-03
## 8-354096	-1.834846e-04	1.329679e-02	6.466428e-03	-4.028492e-03
## 8-354109	-2.979323e-02	6.752653e-02	5.650448e-02	-3.796152e-03
## 8-354119	-2.028751e-02	3.141396e-02	3.095425e-02	7.423551e-03
## 8-354210	-9.077136e-03	1.104510e-02	2.037795e-02	5.782524e-03
## 8-354248	-1.220896e-02	1.057924e-02	-2.832646e-02	-4.380388e-03
## 8-354273	-2.549591e-02	-1.265544e-02	2.791500e-02	2.048725e-02
## 8-354281	-1.264814e-02	-1.895231e-02	-7.261571e-02	-9.942727e-03
## 8-354297	-8.919007e-03	8.210749e-03	-4.422312e-02	-2.558739e-03
## 8-354340	4.088421e-01	-4.377911e-02	-1.128043e-01	-9.564078e-02
## 8-354342	6.029244e-02	-3.818687e-02	-3.435060e-03	-1.281194e-01
## 8-354433	7.604101e-02	1.766465e-02	-9.831404e-03	4.226987e-02
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## 8-354473	-2.659662e-02	-1.380124e-02	1.553771e-02	1.532012e-02
## 8-354492	-1.778673e-03	-6.822499e-02	9.788289e-03	3.448578e-02
## 8-354505	4.360314e-02	1.035327e-02	-4.771146e-03	2.247030e-02
## 8-354565	-8.315430e-03	-5.662518e-03	-3.450003e-02	-2.633008e-03
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## 8-354629	5.063411e-02	2.055831e-02	-6.999227e-03	3.927170e-02
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## 8-354765	-2.784928e-02	3.993062e-02	3.740595e-02	1.384581e-02
## 8-354776	1.130948e-02	-2.255376e-03	-6.086999e-04	-4.584260e-02
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## 8-354827	7.854855e-03	2.889336e-02	-6.192191e-03	-3.555813e-02
## 8-354849	-3.216084e-02	7.711422e-02	2.371759e-02	8.616707e-03
## 8-354856	-1.834997e-03	-7.347065e-02	1.066609e-02	3.684521e-02
## 8-354884	-2.784928e-02	3.993062e-02	3.740595e-02	1.384581e-02
## 8-354940	-1.045342e-02	-3.224509e-02	3.516279e-02	-6.451908e-03
## 8-354950	-1.441230e-02	2.276641e-02	2.282838e-02	4.661017e-03
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## 8-355000	9.283176e-03	2.873413e-02	-6.850502e-03	-3.153111e-02
## 8-355011	-2.186810e-03	-2.873404e-02	-3.700653e-04	-5.422387e-04
## 8-355056	3.657048e-02	3.609894e-02	-6.974281e-03	-5.412271e-02
## 8-355070	-3.949415e-02	-1.068237e-01	1.019946e-02	3.048699e-03
## 8-355079	-9.080972e-03	1.561828e-02	2.793533e-02	8.558240e-03
## 8-355109	1.710458e-02	-9.371824e-03	-1.419018e-02	2.976274e-03
## 8-355119	-9.066637e-03	1.688969e-02	1.993201e-02	1.934671e-03

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## 8-355127 -2.906666e-02 -2.378622e-03 -5.727118e-02 -5.880316e-03
## 8-355129 -2.636145e-03 2.489579e-03 -3.252667e-02 -2.761632e-03
## 8-355203 3.860075e-02 4.021325e-03 -5.794679e-03 1.813587e-02
## 8-355203_2 -3.216084e-02 7.711422e-02 2.371759e-02 8.616707e-03
## 8-355207 -1.952695e-02 -8.952344e-03 1.047672e-02 7.753555e-03
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## 8-355434 -3.103377e-03 -1.684100e-02 2.091456e-02 -1.335543e-02
## 8-355449 -1.265791e-02 8.357389e-03 -3.244723e-02 -5.741024e-03
## 8-355460 -1.971862e-02 4.437625e-02 2.626520e-02 -4.694999e-04
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## 8-355731 3.996943e-02 5.139998e-02 2.680845e-02 3.189484e-02
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## 8-355741 -2.234922e-02 -2.555966e-03 1.195236e-02 9.687623e-04
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## 8-355790 -1.859941e-02 1.335208e-02 2.152775e-02 1.904760e-02
## 8-355874 -6.426203e-03 9.845106e-06 4.606302e-04 -1.008047e-02
## 8-355884 -2.486884e-02 3.670226e-02 3.480384e-02 1.265529e-02
## 8-355892 6.154050e-02 1.795781e-02 -2.406704e-03 1.003402e-02
## 8-355928 -1.505052e-02 -6.220744e-03 -3.773635e-02 -6.054693e-03
## 8-355957 -5.827519e-03 -2.558014e-02 -6.353246e-02 -1.425658e-02
## 8-355964 -5.228968e-03 -2.767261e-02 3.058337e-02 -1.822973e-02
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## 8-356161 -1.625577e-02 -1.495634e-02 -3.406561e-02 -1.322236e-02
## 8-356253 -3.753377e-02 -1.667513e-02 -5.658623e-02 3.378747e-03
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## 8-356552 -1.130238e-02 3.870940e-02 4.047310e-02 -9.845770e-03
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## 8-356792 -1.582762e-02 -2.896679e-02 -8.446726e-03 2.098098e-02
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## 8-357481     -5.343220e-03   1.170488e-02  1.935737e-02 -8.048467e-04
## 8-357506     -4.871827e-03  -8.016837e-03 -4.730078e-02 -2.718973e-03
## 8-357536     -1.907041e-02  -3.959957e-02 -9.522265e-03  1.310453e-02
## 8-357574     -2.155294e-02   5.449976e-02  3.676022e-02  3.736523e-03
## 8-357592      1.614943e-02   7.630566e-03  3.593352e-03 -3.893096e-02
## 8-357603     -7.212151e-03   1.871797e-02  2.192118e-02 -2.608743e-03
## 8-357658     -1.564010e-02  -2.574595e-02  2.145504e-02 -1.716736e-03
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## 8-357848     -1.332001e-02  -1.333076e-02 -3.497001e-02 -1.366816e-02
## 8-357876     -6.976205e-03  -2.023210e-02  2.934875e-02 -1.310552e-02
## 8-357886     -2.972086e-02  -5.474439e-02 -1.716746e-02  1.805466e-02
## 8-357932      1.938728e-02  -6.069861e-03  9.152783e-04 -2.151723e-02
## 8-357951      1.037991e-02  -2.559175e-02 -3.874251e-02 -1.072654e-02
## 8-357970      3.330092e-02   1.349793e-02 -3.515661e-02 -1.146261e-02
## 8-357977     -1.804813e-03   5.562996e-02  2.208224e-02 -3.595142e-02
## 8-358046      1.703539e-02  -1.753955e-02  1.453058e-03 -3.735421e-02
## 8-358047      8.235940e-02   2.406666e-02 -1.197368e-02  5.150347e-02
## 8-358083     -1.492727e-02  -2.147528e-02  1.854827e-02 -1.148838e-03
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## 8-358222     -2.433376e-02  -2.511509e-03  1.420256e-02  2.381646e-03
## 8-358227      1.128769e-02   2.108188e-02  2.648355e-02 -1.038655e-02
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## 8-358304_2   -4.023979e-02  -1.497778e-02 -5.435219e-02  5.689123e-03
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## 8-358457     -1.999996e-02  -1.398875e-02  1.378510e-02  4.198830e-03
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## 8-359143	-1.890739e-02	-1.184971e-04	1.653069e-02	1.402202e-02
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## 8-359258	7.559041e-02	2.200410e-02	-1.064054e-02	4.602492e-02
## 8-359266	3.639437e-02	5.083917e-03	-4.975106e-03	1.932052e-02
## 8-359294	-8.355520e-03	1.498458e-02	-2.540108e-02	-7.784767e-04
## 8-359318	-3.735295e-02	-3.874199e-02	3.764083e-02	1.436069e-02
## 8-359325	2.478975e-01	3.938359e-01	-1.370060e-01	-1.084414e-01
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## 8-359489	-1.590758e-03	-1.423945e-02	2.332956e-02	-5.893594e-03
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## 8-359613	1.629499e-02	8.511666e-03	3.326985e-03	-3.746635e-02
## 8-359641	1.928690e-01	4.578878e-02	-2.549621e-02	1.102977e-01
## 8-359669	3.633452e-02	-1.408441e-02	2.252117e-03	-6.610484e-02
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## 8-360137	-1.495787e-02	1.616271e-02	1.523772e-02	8.392901e-03
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## 8-360237	-6.457246e-03	3.795279e-04	3.369824e-04	-9.140090e-03
## 8-360310	3.324546e-04	-2.712721e-03	-2.737436e-02	8.942425e-05
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## 8-360423      1.989093e-01  4.819948e-02 -2.066859e-02  1.069361e-01
## 8-360481     -1.760448e-02  2.247134e-02  5.150830e-02  1.667691e-02
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## 8-360531     -1.681252e-02  1.351164e-02 -7.986583e-02 -6.461849e-03
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## 8-360806     -1.066642e-02 -7.067831e-03  1.681749e-02  7.897550e-03
## 8-360864     -1.640508e-02 -6.833928e-03 -4.150457e-02 -6.372726e-03
## 8-360929      3.685147e-02  8.031932e-03 -4.290111e-03  1.845631e-02
## 8-360932      2.499392e-02  3.634956e-02 -6.878602e-03 -6.039129e-02
## 8-360945     -6.431367e-03 -2.018366e-02  2.124472e-02 -1.084669e-02
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## 8-361037     -4.056147e-02 -5.195343e-02 -2.508928e-02 -3.448471e-03
## 8-361141      4.921218e-04  9.231545e-03  2.120678e-02 -1.370837e-02
## 8-361185     -9.215227e-03  6.269968e-03 -6.529801e-02 -3.305094e-03
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## 8-361240     -1.720998e-01  2.297728e-01  4.238164e-02 -9.755696e-02
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## 8-361437      4.405543e-02  4.315791e-03 -6.549426e-03  2.113580e-02
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## 8-361499      4.617203e-01 -8.690513e-02 -7.384704e-02  1.105618e-01
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## 8-363594   -1.739730e-02 -8.485198e-04  7.463090e-03 -1.595841e-02
## 8-363601   -8.933488e-03  1.043197e-02  2.699389e-02  3.730229e-03
## 8-363625    2.850527e-02 -5.256136e-03  4.922132e-03 -2.772554e-02
## 8-363713   -4.604403e-02 -1.958707e-02 -9.439935e-02 -8.485334e-03
## 8-363730   -1.721081e-03 -4.584394e-02  6.469165e-02 -2.444037e-02
## 8-363752    5.764529e-04 -1.084661e-02  2.159955e-02 -1.287240e-03
## 8-363786    2.990455e-02 -5.470284e-03  5.191097e-03 -2.873265e-02
## 8-363827    3.031857e-02  3.564402e-02 -1.195556e-02 -1.312690e-02
## 8-363963   -1.734813e-02  3.391376e-02  5.568123e-02  1.576305e-03
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## 8-364054 -4.772162e-03 6.528425e-03 -4.373879e-02 -1.291296e-03
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## 8-364092 -3.613111e-02 -1.883600e-02 -7.460097e-02 -4.927382e-03
## 8-364164 -5.760905e-02 -3.033278e-02 1.021778e-02 -2.587852e-03
## 8-364270 1.187817e-02 -1.703111e-02 2.066719e-03 -1.999627e-02
## 8-364369 -2.323827e-02 6.300113e-03 -7.021992e-02 -8.013811e-03
## 8-364383 2.990455e-02 -5.470284e-03 5.191097e-03 -2.873265e-02
## 8-364416 -7.966564e-03 1.311772e-02 -3.543484e-02 -1.266597e-03
## 8-364436 -1.478867e-02 -7.648669e-02 9.602201e-03 4.655664e-02
## 8-364542 -2.183952e-02 3.898845e-02 6.840335e-02 2.737340e-03
## 8-364550 -1.800188e-02 2.148043e-02 1.080256e-02 1.175156e-02
## 8-364662 -1.399400e-02 -9.872050e-03 -4.247998e-02 -6.540048e-03
## 8-364664 -1.069819e-02 1.309266e-02 2.431458e-02 8.339295e-03
## 8-364766 -2.675882e-03 -4.019091e-03 1.601481e-03 -1.559561e-02
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## 8-365073 -2.356022e-02 -2.410988e-02 2.950946e-02 1.012481e-02
## 8-365077 1.475978e-02 -5.624036e-03 -2.779828e-03 -2.766494e-02
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## 8-365219 -3.251541e-02 7.391986e-02 3.252109e-02 1.250958e-02
## 8-365230 -1.908415e-02 -3.744541e-03 -2.467407e-03 1.140716e-02
## 8-365300 -6.095173e-03 -1.407148e-02 2.872538e-02 -2.983203e-02
## 8-365308 -7.900863e-03 1.981648e-02 -2.227100e-02 -2.753908e-03
## 8-365385 -1.543143e-02 -3.724715e-03 2.305909e-02 7.099192e-03
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## 8-365453 3.709314e-02 -8.986173e-03 1.191917e-03 -2.929218e-02
## 8-365575 -9.822733e-03 2.376036e-03 -3.837859e-02 -4.124771e-03
## 8-365668 4.593869e-02 1.224066e-02 3.842355e-03 -3.994286e-02
## 8-365674 -2.145308e-02 -1.735425e-02 6.399409e-04 -2.396242e-03
## 8-365685 -3.948798e-03 3.468798e-03 3.185292e-02 -4.853625e-03
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## 8-365851 7.754125e-02 2.043234e-02 -9.601585e-03 4.738936e-02
## 8-365898 1.596454e-02 -1.710007e-02 -2.106676e-04 -2.489846e-02
## 8-365975 -1.582858e-01 3.187498e-01 -1.089269e-01 6.609880e-02
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## 8-366225 4.394726e-02 3.787629e-02 -1.106282e-02 6.079293e-03
## 8-366225_2 4.597847e-03 -1.176524e-02 -4.496999e-02 -1.620168e-03
## 8-366329 1.089198e-01 1.658060e-02 -5.981273e-03 1.431871e-02
## 8-366341 1.495694e-02 -7.901453e-03 -1.350220e-03 -3.646568e-02
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## 8-366363 -1.442877e-02 4.312107e-02 6.211747e-02 -9.348112e-03
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## 8-366632    2.062035e-02  6.457610e-03  1.231256e-03 -3.206540e-02
## 8-366716    1.433781e-01  2.156747e-02 -8.990440e-02  3.587476e-02
## 8-366769   -1.352267e-02 -4.043967e-02  4.606025e-02  3.000734e-03
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## 8-366888   -6.483876e-03 -8.454958e-03  2.201816e-02 -2.595026e-02
## 8-366901   -2.731769e-02  3.416785e-02  2.198808e-02  1.963020e-02
## 8-366949    1.176652e-01  1.273075e-02 -9.863597e-03  1.786356e-02
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## 8-366979    1.519168e-03  7.434833e-03  3.933316e-02 -2.697674e-02
## 8-367091   -4.793286e-02 -2.076194e-01 -7.458107e-03  7.973557e-02
## 8-367118    3.528167e-03  8.129058e-03  3.717027e-02 -3.278619e-02
## 8-367127   -2.179015e-02  1.370345e-02  1.848843e-02  1.636064e-02
## 8-367177    4.903050e-02  2.445483e-02 -8.897354e-03  4.825017e-02
## 8-367217   -2.339836e-02 -7.268024e-03 -2.713144e-03 -3.749260e-03
## 8-367359   -6.201077e-04 -2.393122e-03 -4.070626e-02 -1.078723e-03
## 8-367470    7.066424e-03 -8.582546e-03 -3.457375e-03 -3.135172e-02
## 8-367491   -6.072057e-03 -8.237542e-03  2.175391e-02 -2.604574e-02
## 8-367504   -2.231442e-02  6.404259e-03  1.097316e-02  2.016695e-02
## 8-367580   -1.418605e-02 -8.028802e-02  1.360917e-02  3.273428e-02
## 8-367627   -3.048761e-02  5.757737e-03 -2.742028e-02  6.105490e-03
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## 8-367986    8.243674e-03 -6.631943e-03 -1.002282e-03 -3.363468e-02
## 8-367995   -1.460588e-02 -1.190079e-02  1.413795e-02  6.974980e-03
## 8-368032    5.411240e-02  8.826925e-03  1.391220e-03 -1.090453e-02
## 8-368033   -7.942239e-03  8.747015e-04 -3.893677e-02  1.828647e-04
## 8-368042   -1.730335e-02 -2.220957e-02  3.319884e-02  4.852070e-03
## 8-368078   -9.361471e-03  1.989912e-02  3.186347e-02 -4.681314e-03
## 8-368167    6.769802e-02  2.897143e-02 -1.066181e-02  5.626336e-02
## 8-368243   -2.755663e-02  6.393124e-02  7.910466e-02 -2.265581e-03
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## 8-368617 -3.133846e-02 -6.109598e-02 -2.704349e-02 2.098464e-02
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## 8-368744 -1.766592e-02 1.922080e-02 1.616260e-02 1.386452e-02
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## 8-368897 -1.766592e-02 1.922080e-02 1.616260e-02 1.386452e-02
## 8-368919 6.340450e-03 -6.629086e-03 -2.411740e-03 -3.770225e-02
## 8-368919_2 -2.714924e-02 -8.143771e-03 -2.628515e-03 1.716948e-02
## 8-369049 -1.490575e-03 7.332283e-03 -2.840989e-02 -4.605531e-03
## 8-369115 1.683493e-01 -3.656296e-01 2.369435e-04 -1.166817e-01
## 8-369115_2 -1.791961e-02 4.026633e-02 2.720246e-02 -1.356830e-03
## 8-369122 -1.010641e-02 1.578286e-02 3.517907e-02 1.044817e-02
## 8-369129 -1.010549e-02 5.864918e-03 1.072023e-02 8.922272e-03
## 8-369130 7.945944e-04 -1.099807e-02 -3.391318e-02 -4.117801e-03
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## 8-369402 -1.835661e-03 -8.193936e-05 -3.004341e-02 -6.647089e-04
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## 8-369481 5.035458e-02 1.150480e-02 2.719260e-03 -2.572619e-02
## 8-369497 -2.853353e-02 6.519189e-02 2.755547e-02 1.169401e-02
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## 8-369673 -1.829742e-02 1.970300e-02 2.236849e-02 1.126866e-02
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## 8-370065 -6.905665e-03 8.801103e-03 2.286064e-02 7.549686e-03
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## 8-370317 -1.006693e-02 1.750636e-02 2.866027e-02 9.188321e-05
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## 8-371531 -6.487087e-03 -5.820262e-03 -3.180285e-02 -3.252394e-03
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## 8-371789 -1.204126e-03 1.071864e-03 -3.182101e-02 -2.065837e-03
## 8-371839 -1.548316e-03 1.893627e-03 -3.538264e-02 -2.127596e-03
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## 8-373456	-2.399620e-02	-1.712297e-02	-3.886148e-02	4.586784e-03
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## 8-379515	-1.268770e-02	-1.755456e-02	1.696655e-02	-3.426579e-03

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## 8-379516 -4.938194e-03 1.232677e-02 2.451846e-02 -3.048170e-03
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## 8-379643 3.964663e-02 1.366610e-02 -4.843008e-03 2.926558e-02
## 8-379695 1.337551e-02 -1.265061e-02 -1.197173e-03 -3.573644e-02
## 8-379698 4.170639e-01 -2.270367e-01 6.690464e-02 -8.271557e-03
## 8-379704 7.473912e-03 8.594182e-03 9.468340e-03 -3.176690e-02
## 8-379713 -2.338388e-03 -5.570015e-03 3.620445e-02 -9.075980e-03
## 8-379745 -4.331364e-02 -1.197660e-02 4.021455e-02 -2.524175e-02
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## 8-379781 -1.077375e-02 1.309371e-02 -5.559271e-02 -7.185093e-03
## 8-379826 -9.484078e-04 -2.009358e-02 3.308966e-02 -5.701934e-03
## 8-379838 -2.458729e-02 8.062341e-03 2.227599e-02 2.292122e-02
## 8-379910 -1.744580e-02 3.835994e-03 -1.080940e-04 1.130995e-02
## 8-379947 4.222045e-02 1.736158e-02 -5.116159e-03 2.744069e-02
## 8-379949 -2.335228e-02 -4.957038e-02 5.297833e-02 2.112433e-03
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## 8-380348 -1.988001e-02 1.524164e-03 6.196989e-05 1.195712e-02
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## 8-381193 -2.827551e-02 6.380206e-02 2.641725e-02 9.037676e-03
## 8-381205 -1.571683e-02 -6.663352e-03 2.183923e-03 -6.164971e-03
## 8-381239 1.137572e-02 2.914807e-02 -5.589839e-03 -3.982198e-02
## 8-381277 -1.408082e-02 -1.021720e-01 1.234581e-02 5.969051e-02
## 8-381358 -1.676104e-02 2.504439e-02 4.602644e-02 6.932874e-03
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## 8-381924   -5.869730e-02 -1.393278e-02  1.708270e-02  3.234954e-02
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## 8-381973   -2.970128e-03 -4.295060e-03  2.796424e-02  9.749192e-03
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## 8-382158    8.210439e-02  2.168293e-02 -2.647539e-03  1.027422e-02
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## 8-382309   -6.118491e-03  1.537221e-02  2.406045e-02  4.661737e-03
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## 8-382576   -1.282594e-02  2.360774e-02  5.040103e-02  1.051971e-02
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## 8-383210   -1.284167e-02  3.305598e-03  1.133575e-02  1.314169e-02
## 8-383244   -1.454511e-02 -6.146458e-02  6.721703e-03  3.957450e-02
## 8-383286    5.212527e-01 -7.222072e-02 -6.590238e-02 -7.264877e-04
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## 8-383850   -5.047331e-03  1.720421e-02 -2.529304e-02 -4.358179e-03
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## 8-384123	3.450240e-02	1.123580e-02	-4.487906e-03	-2.284425e-02
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## 8-384219	-2.643401e-02	-9.002976e-03	-6.198804e-02	-8.226700e-03
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## 8-384459	2.335989e-02	-1.923734e-02	4.145516e-03	-9.295492e-02
## 8-384500	1.729711e-02	-1.739948e-02	-1.059736e-03	-3.463307e-02
## 8-384537	2.295430e-02	-1.883442e-02	4.529357e-03	-9.225564e-02
## 8-384594	-2.619692e-02	5.491701e-02	5.015690e-02	-1.590544e-03
## 8-384597	3.687071e-02	8.575734e-03	2.974516e-03	-2.055785e-02
## 8-384623	-3.101662e-02	-8.084614e-03	-1.581911e-01	-1.378916e-02
## 8-384631	-1.720222e-02	-5.471181e-03	-3.913442e-02	-6.229270e-03
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## 8-384886	1.520225e-02	-1.543565e-02	-1.001942e-04	-3.080020e-02
## 8-385024	-2.016448e-02	4.175580e-02	4.078626e-02	4.495933e-03
## 8-385076	-2.253125e-02	-1.528326e-02	-4.342834e-02	2.410579e-03
## 8-385107	-3.321498e-03	-4.139003e-03	4.591200e-03	-2.456164e-02
## 8-385157	-5.975700e-03	-2.570622e-02	-1.495848e-02	-3.203311e-03
## 8-385225	-1.178375e-02	2.379424e-02	3.138862e-02	8.716877e-03
## 8-385469	-6.685746e-02	-5.626255e-02	4.660587e-02	1.155611e-02
## 8-385493	1.391628e-02	1.828146e-02	-2.958661e-03	-3.196162e-02
## 8-385506	-1.009382e-02	-2.349316e-02	-4.586259e-03	8.665004e-03
## 8-385525	-1.808728e-02	-6.899248e-02	9.103309e-03	4.390980e-02
## 8-385590	-1.448726e-02	-2.529828e-02	-1.380631e-02	8.288997e-03
## 8-385601	-9.623072e-03	-1.944461e-02	2.098294e-02	-3.501778e-03
## 8-385603	-1.310232e-02	3.327758e-02	3.304402e-02	-1.222092e-03
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## 8-385757	3.610349e-03	1.082668e-04	-2.488337e-02	-2.572459e-03
## 8-385774	-3.734694e-03	4.102359e-03	-2.496302e-02	-3.598487e-04
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## 8-385810	2.857369e-02	-6.314015e-03	-1.776427e-04	-6.959731e-03
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## 8-385965	-4.505959e-02	-3.215058e-06	-1.634804e-02	2.573190e-02
## 8-385969	-1.727365e-02	-1.478751e-03	-1.831103e-03	9.271136e-03
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## 8-386068	-1.098665e-02	5.517592e-03	1.150351e-02	1.231156e-02
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## 8-394697	-3.376707e-02	5.812432e-03	-1.126747e-01	-9.457243e-03
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## 8-395231	7.312687e-02	4.010680e-04	-2.870608e-03	-6.757899e-03
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## 9-409990	-2.201587e-02	-7.244154e-03	-5.819164e-02	-8.178605e-03
## 9-410062	-3.114733e-02	5.683060e-02	7.712977e-02	-2.696519e-03
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## 9-410500	-2.442158e-03	-4.012721e-02	-4.425127e-03	-2.873019e-03
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## 9-410563	4.872172e-02	9.039607e-03	1.570193e-03	-2.497763e-02
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## 9-410597	-2.478313e-02	4.086849e-02	6.710767e-02	4.896346e-03
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## 9-410685	5.455827e-03	-1.296290e-02	1.186591e-03	-3.328731e-02
## 9-410714	-2.369238e-02	-2.305653e-02	1.995935e-02	4.519508e-03
## 9-410872	-6.770872e-03	1.672590e-02	-1.996953e-02	-9.822399e-04
## 9-410889	-1.843128e-02	-2.243641e-02	2.027246e-02	1.900393e-03
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## 9-410957	-7.919701e-03	2.294708e-02	-1.441859e-02	-4.830490e-03
## 9-410964	3.552023e-02	-1.531019e-02	-3.063554e-03	-2.627273e-02
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## 9-411127	5.110997e-02	9.716068e-03	1.244322e-03	-2.748012e-02
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## 9-411152	9.049930e-02	-1.455438e-02	-2.827715e-03	-6.261763e-02
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## 9-411239	-1.479787e-02	-1.188391e-04	2.855406e-03	1.045120e-02
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## 9-411417	-1.459088e-02	-2.612102e-02	3.878407e-02	-3.116902e-02
## 9-411458	3.395047e-03	-1.861919e-02	-3.017705e-02	-6.960379e-03
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## 9-412119 -1.837588e-02 4.176276e-02 2.609821e-02 -3.099650e-05
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## 9-412313 -1.386915e-02 -1.249207e-02 1.528936e-02 -1.338344e-02
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## 9-417365	-2.025530e-02	-3.135463e-02	9.914808e-03	3.545763e-02
## 9-417399	-1.087503e-02	-1.205746e-02	5.279551e-03	-3.683593e-02
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## 9-424634      7.737671e-02   -8.869225e-02   1.686094e-01   -1.748610e-01
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## 9-438067	7.456530e-02	2.552250e-02	1.079035e-02	-8.288174e-02
## 9-438069	-3.856717e-02	-2.088222e-03	1.232243e-03	2.340792e-02
## 9-438096	-9.535386e-03	2.449308e-04	-3.286455e-02	-3.430292e-03
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## 9-446036	-5.537703e-02	4.853877e-02	-2.020936e-01	-2.423033e-02
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## 9-448735	-1.664039e-03	-1.671575e-02	1.470188e-02	-3.537768e-02
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## 9-448820_2	-2.269580e-02	-2.073687e-02	1.693045e-02	1.316157e-03
## 9-448824	-1.341285e-02	2.209954e-02	-2.555835e-02	-1.516222e-03
## 9-448835	3.556025e-02	-5.815555e-03	4.247671e-03	-5.217546e-02
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## 10-460295 -2.728572e-02 3.590970e-02 -2.741906e-02 -9.842198e-04
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## 10-468197 -1.737890e-02  3.183892e-02 -4.415130e-02 -9.180467e-03
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## 10-468327 -2.640160e-02 -1.208081e-02 8.103124e-03 1.475910e-02
## 10-468361 -3.971132e-03 -2.654828e-03 -8.090818e-04 -2.741798e-02
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## 10-470484 -6.600930e-03 -9.830057e-05 4.443050e-04 -1.077023e-02
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## 10-470988 -1.390695e-02 -1.789620e-02 -1.107947e-02 4.980263e-03
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## 10-491704  6.084252e-03 -2.708072e-02 -2.165013e-02 -1.472237e-02
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## 10-494165 -7.987517e-02 -6.507311e-02 8.899341e-03 -1.548078e-03
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## 11-512582 2.834664e-02 -1.906116e-03 8.831305e-04 -2.374794e-03
## 11-512734 -2.976415e-02 -7.902374e-03 2.646316e-02 2.803500e-02
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## 11-546379   -6.207114e-03  4.123785e-02  4.708008e-02 -1.556123e-02
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## 11-546628    4.364091e-02  5.820537e-03 -6.649860e-03  2.225479e-02
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## 11-546742   -2.546836e-02  -1.514299e-02 -3.339647e-02  1.111863e-02
## 11-546797   -1.891435e-02  1.083023e-02  2.617556e-04  1.329879e-02
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## 12-550062 -1.403430e-02 3.756209e-02 3.736331e-02 1.378136e-03
## 12-550073 2.445004e-01 6.442153e-02 -2.405334e-02 9.618810e-02
## 12-550126 -9.557253e-03 1.673376e-03 1.181127e-02 -4.490999e-03
## 12-550131 -1.863867e-02 -2.402959e-04 1.960024e-02 1.393082e-02
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## 12-550288 3.281309e-01 -5.643367e-02 -5.189918e-03 -1.068156e-01
## 12-550325 6.947290e-02 5.088871e-02 -4.490327e-03 -8.845745e-03
## 12-550354 -5.724353e-03 8.934435e-03 -4.621924e-02 -1.233948e-02
## 12-550356 8.293138e-03 3.183798e-02 7.230777e-04 -3.940407e-02
## 12-550413 3.557648e-02 1.090388e-03 -3.721256e-03 1.072954e-02
## 12-550438 -4.801606e-02 -8.065442e-03 -1.146871e-01 -7.525926e-03
## 12-550515 -1.942432e-02 2.857057e-02 -6.035376e-02 -1.026751e-02
## 12-550756 -1.238704e-02 -3.858666e-02 3.429257e-03 2.849672e-02
## 12-550871 3.293253e-02 1.404455e-02 -8.817053e-03 1.528766e-02
## 12-550909 1.250109e-02 4.260968e-02 -2.732556e-02 3.620506e-02
## 12-550916 3.293253e-02 1.404455e-02 -8.817053e-03 1.528766e-02
## 12-550969 -4.435870e-02 -2.054110e-02 1.646696e-02 -2.626941e-03
## 12-551052 -1.165815e-02 1.310719e-02 1.719202e-02 7.314197e-03
## 12-551104 -1.165815e-02 1.310719e-02 1.719202e-02 7.314197e-03
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## 12-551239 4.050631e-03 -1.050819e-02 -3.132915e-02 -1.977550e-03
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## 12-551309 3.654543e-02 8.306965e-03 2.493777e-03 -2.584531e-02
## 12-551439 -9.985040e-03 -1.067160e-01 1.632422e-02 5.828106e-02
## 12-551456 -2.910500e-02 1.525189e-02 7.846259e-02 2.247528e-02
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## 12-551951 -3.174697e-02 -7.515376e-03 -8.128398e-02 -5.119629e-03
## 12-551961 -2.844281e-03 1.193459e-02 2.073384e-02 -7.852406e-03
## 12-552113 -3.063668e-04 -6.233771e-03 -2.897563e-02 -2.237542e-03
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## 12-552673 -1.960869e-03 -2.699803e-02 -3.559640e-03 -1.158975e-04
## 12-552716 -5.471328e-03 -3.929156e-03 2.907632e-02 6.950217e-03
## 12-552740 -1.911409e-02 -7.021026e-03 -6.137503e-02 -5.912628e-03
## 12-552798 8.346108e-02 2.586411e-02 -1.192243e-02 6.110497e-02
## 12-552827 -1.456955e-02 -3.869511e-03 4.198339e-03 -1.325697e-02
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## 12-553017 -1.772527e-02 -1.599058e-02  2.996673e-02 -4.037768e-02
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## 12-553074 -5.378543e-03  2.609882e-02  6.450765e-03 -1.290057e-02
## 12-553088 -3.304845e-02 -2.992699e-02  2.590439e-02  5.088221e-04
## 12-553236  9.662215e-02  3.303131e-02 -2.006690e-02  5.701602e-02
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## 12-553246 -3.721735e-03  1.830374e-03  2.117879e-02  5.552159e-03
## 12-553374 -8.507103e-05 -4.290001e-04 -3.687827e-02 -1.125697e-03
## 12-553383 -8.896995e-03  1.623125e-02  3.158850e-02 -9.658664e-04
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## 12-553427 -1.456955e-02 -3.869511e-03  4.198339e-03 -1.325697e-02
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## 12-554372 -4.501391e-02 -2.275720e-02  1.944241e-02  5.618534e-03
## 12-554393  6.364674e-02  1.437434e-02 -2.441900e-03  8.382243e-03
## 12-554410 -3.689031e-02  1.213909e-02  2.717781e-02  3.588262e-02
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## 12-554453 -2.118431e-02 -8.140565e-03 -5.339811e-02 -4.841824e-03
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## 12-554782 -1.946476e-02 -2.347558e-04  2.020551e-02  1.462363e-02
## 12-554797  4.133077e-01 -2.501777e-01  7.925930e-02 -2.092228e-02
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## 12-554944  5.104999e-02  2.006957e-02 -7.323711e-03  4.218077e-02
## 12-554972 -5.823346e-05 -2.396155e-02  3.792453e-02 -1.932739e-02
## 12-554980  2.945009e-02 -8.900043e-03  4.427458e-03 -2.955831e-02
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## 12-555178  7.899354e-02  1.927058e-02 -1.258738e-02  4.287637e-02
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## 12-555218 -4.074988e-03 -1.383309e-02  2.328801e-02 -5.891045e-02
## 12-555251 -5.435532e-02 -2.785341e-02  1.758152e-02  6.665561e-03
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## 12-555426 -1.327452e-02  2.577898e-02 -3.559171e-02 -5.858294e-03
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## 12-555498  5.438828e-02  1.271935e-02 -2.280659e-03  5.491527e-03
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## 12-555627  1.822648e-04 -2.519910e-02 -4.356284e-02 -9.260798e-03
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## 12-555763  6.791994e-02  1.027055e-02 -7.270369e-03  2.140566e-02
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## 12-555780 -1.409405e-02 -4.510600e-03  7.099496e-03 -1.525101e-02
## 12-555782 -2.530569e-02  3.920739e-02  7.176101e-02  4.660375e-03
## 12-555784  2.945009e-02 -8.900043e-03  4.427458e-03 -2.955831e-02
## 12-555811  2.937142e-01  7.371863e-02 -3.005042e-02  1.062279e-01
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## 12-555865 -9.131013e-03  1.784998e-02  2.546263e-02  1.256022e-03
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## 12-556143 -1.472045e-02 -2.616963e-02 -9.737876e-03  1.338901e-02
## 12-556151 -1.046233e-01 -9.025317e-02 -1.449303e-01 -3.923885e-02
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## 12-556331 -8.977317e-03 -1.757541e-02  2.010678e-02 -8.026657e-03
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## 12-556373 -3.338342e-02  6.445533e-02 -5.954489e-02 -1.051046e-02
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## 12-556440 -3.888258e-02  9.305643e-03  5.444866e-03  3.276754e-02
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## 12-556719_2 1.061925e-02  1.065306e-02 -9.730626e-04 -1.980610e-02
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## 12-556888 -5.886054e-03 -6.541715e-04  6.921942e-04 -1.112197e-02
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## 12-556971  4.754077e-02  2.310424e-02 -1.180943e-02  2.292389e-02
## 12-556979  5.436830e-02  1.322779e-02 -3.468058e-03  2.123627e-02
## 12-557015 -3.998677e-02 -1.908949e-02  1.120673e-02  2.055793e-02
## 12-557025  1.747194e-03 -1.785744e-02  3.203889e-02 -2.044231e-02
## 12-557068 -2.698481e-02 -1.004592e-02 -5.911907e-02 -8.835555e-03
## 12-557070  3.901063e-03 -1.381895e-02  6.873291e-04 -3.264059e-02
## 12-557082 -4.337657e-03 -6.892171e-02  9.407897e-03  3.731995e-02
## 12-557083  7.595972e-02  1.694856e-02 -1.403256e-02  3.844084e-02
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## 12-557202 -1.064204e-02  1.448155e-02 -2.913789e-02 -8.512317e-05
## 12-557254 -2.257811e-02 -3.544487e-04  2.480616e-02  1.543777e-02
## 12-557305 -1.703148e-02 -2.880528e-03  1.980376e-02  1.673570e-02
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## 12-557347 -1.603561e-02 -7.224365e-03  2.744740e-03  4.265896e-03
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## 12-573624 -2.741548e-02 -8.696418e-03 2.442539e-02 2.587809e-02
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## 12-573660 -1.281940e-02 -2.599018e-02 -8.312880e-03 1.312665e-02
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## 12-573711 -4.524020e-03 4.418917e-03 -4.012190e-02 2.852487e-05
## 12-573780 2.019072e-02 -1.501419e-02 -2.090154e-03 -5.372458e-02
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## 12-581762 -3.412181e-02 -1.375052e-02 -7.507035e-02 -1.032143e-02
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## 12-582001 -2.012239e-02 -3.873989e-04 2.106874e-02 1.501614e-02
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## 12-583939 3.920239e-02 1.425091e-02 -3.261794e-03 6.953772e-03
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## 12-584061 8.496359e-02 -2.899552e-02 8.128402e-02 -3.028322e-02
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## 12-586366 7.318825e-03 1.808850e-02 -2.709176e-03 -2.717018e-02
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## 12-596487 -8.106511e-03  1.423076e-02  1.339046e-02  3.010991e-03
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## 13-619421 -2.013519e-02 -6.722944e-03  5.722337e-03  1.387142e-02
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## 1-97 1.391231e-02 4.642863e-03
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## 1-846      -2.424882e-02  -2.089582e-03
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## 1-4270      2.170676e-02 -1.734216e-03
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## 1-6703       9.796628e-03  7.382983e-03
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## 1-7094      -4.565154e-03 -1.144534e-02
## 1-7117      -3.413855e-02 -3.655437e-02
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## 1-7251      1.577674e-03 -4.245556e-03
## 1-7281      -2.960806e-03  5.057450e-04
## 1-7304      -2.953296e-02 -9.842675e-03
## 1-7309      2.372241e-02  7.327172e-03
## 1-7315      1.435138e-02 -1.008237e-02
## 1-7344      1.519978e-01 -2.291960e-02
## 1-7348      1.435138e-02 -1.008237e-02
## 1-7386      -2.128252e-02 -2.862476e-02
## 1-7437      1.696228e-02  3.722032e-02
## 1-7465      -9.631921e-04 -1.243698e-02
## 1-7487      -4.597228e-02 -3.412980e-02
## 1-7572      -4.794626e-03  2.136735e-02
## 1-7581      1.505993e-02  3.116712e-02
## 1-7616      5.417013e-03 -4.881712e-03
## 1-7670      1.117483e-02  4.051150e-03
## 1-7683      2.639966e-02  1.430886e-03
## 1-7718      -9.143062e-02  3.290633e-02
## 1-7725      -2.874902e-02  1.213836e-02
## 1-7732      -5.522944e-03 -1.308519e-02
## 1-7760      5.742441e-03 -1.733816e-03
## 1-7798      -2.986582e-04 -8.318211e-03
## 1-7819      1.961807e-02 -7.077214e-03
## 1-7852      2.711226e-02  1.088806e-02
## 1-7880      3.424634e-02 -4.584850e-02
## 1-7897      -3.205657e-03  2.343816e-02
## 1-7998      -2.031734e-02  4.261502e-02
## 1-8005      -6.253379e-03  6.396541e-02
## 1-8017      4.271352e-03  3.307148e-03
## 1-8055      -3.205657e-03  2.343816e-02
## 1-8074      3.715952e-02  1.148853e-02
## 1-8108      3.103913e-02  1.517817e-02
## 1-8187      -8.048033e-04 -1.180205e-02
## 1-8236      2.174345e-03  4.145763e-03
## 1-8239      -4.584117e-03  8.825000e-03
## 1-8243      4.578284e-03  3.026957e-02
## 1-8317      5.065234e-02 -3.474690e-02
## 1-8356      -2.508424e-02 -5.474286e-03
## 1-8413      -4.373402e-04 -8.612897e-03
## 1-8430      -8.161745e-03 -4.981679e-02
## 1-8474      -3.425368e-03  2.199423e-02
## 1-8486      4.943464e-06 -2.554195e-02
## 1-8487      -6.931534e-04 -1.108234e-02
## 1-8599      2.385687e-02  2.317352e-02

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## 1-8613      4.887402e-03 -6.268287e-03
## 1-8623      3.250841e-03  3.643543e-03
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## 1-8651      1.227406e-02  2.656440e-03
## 1-8716      -4.962887e-03 -9.897646e-03
## 1-8765      -4.951973e-04 -1.178769e-02
## 1-8844      1.595243e-03  9.206055e-03
## 1-8857      7.616736e-03 -2.066049e-03
## 1-8896      -7.913789e-03 -8.589838e-03
## 1-8933      9.331107e-03  2.018713e-02
## 1-9078      -2.836916e-02 -2.961265e-04
## 1-9086      1.022300e-02  3.441961e-02
## 1-9087      9.646516e-03  2.153379e-02
## 1-9123      -3.865062e-02  3.290482e-02
## 1-9153      -9.372166e-03  1.231064e-02
## 1-9155      2.299031e-02  2.305049e-02
## 1-9190      2.140628e-02  2.045986e-02
## 1-9266      -1.800327e-02  1.387510e-02
## 1-9280      4.429833e-03 -1.308076e-02
## 1-9341      5.114848e-03  1.754193e-02
## 1-9626      -5.477907e-03 -1.118552e-02
## 1-9666      -8.389891e-03 -6.055768e-03
## 1-9684      -1.366355e-02  1.279802e-02
## 1-9698      -5.971891e-03 -1.176445e-02
## 1-9705      -2.697886e-02 -1.360234e-02
## 1-9762      7.636928e-03  8.753383e-03
## 1-9775      -1.563571e-02 -1.239607e-02
## 1-9812      -3.973283e-02 -6.301238e-03
## 1-9829      -7.412593e-03 -1.638283e-02
## 1-9859      -4.768114e-02 -6.247270e-03
## 1-9928      -6.839055e-04  1.022461e-02
## 1-9997      -8.737324e-03 -1.570500e-03
## 1-10005     -4.122836e-03  5.121642e-02
## 1-10038     4.879210e-03 -6.924405e-03
## 1-10095     -2.791667e-03  2.509657e-02
## 1-10124     -2.200894e-02  2.103795e-02
## 1-10133     -8.576443e-03  1.333095e-02
## 1-10175     2.928559e-02  1.921351e-02
## 1-10181     -2.011825e-02 -1.645991e-02
## 1-10209     -7.553790e-03 -1.156924e-02
## 1-10313     -8.992458e-03  1.452782e-02
## 1-10372     -4.893217e-03 -2.895652e-02
## 1-10439     1.146348e-03 -7.158905e-03
## 1-10462     -2.850616e-03 -7.047519e-04
## 1-10531     -2.472595e-03  2.813215e-02
## 1-10535     3.199388e-02 -2.685400e-02
## 1-10541     1.029092e-02  5.615958e-03
## 1-10573     2.818497e-03  1.331938e-03
## 1-10573_2   -3.035945e-02 -1.454601e-02
## 1-10719     3.462270e-02 -2.128457e-02
## 1-10732     -6.348577e-03 -1.267603e-02
## 1-10738     3.199388e-02 -2.685400e-02
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## 1-10824     -8.992458e-03  1.452782e-02

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## 1-10989      3.956393e-03  3.173987e-04
## 1-10994      3.560410e-02  -1.899899e-02
## 1-11014      4.169294e-02  -2.397191e-02
## 1-11014_2    2.282042e-02  -1.033955e-02
## 1-11063      -1.945747e-02  -2.063238e-02
## 1-11268      1.497147e-01  5.691943e-02
## 1-11315      4.623295e-03  -3.499196e-03
## 1-11334      -4.095738e-02  -4.555831e-03
## 1-11339      -1.016287e-03  -7.434445e-03
## 1-11366      7.045582e-03  4.980809e-02
## 1-11369      1.783724e-02  1.712820e-02
## 1-11455      3.665474e-02  -2.154809e-02
## 1-11469      -8.189533e-03  -2.006919e-03
## 1-11499      -8.620198e-03  -9.453238e-03
## 1-11525      2.159123e-02  -4.181830e-02
## 1-11525_2    2.248327e-02  3.439209e-02
## 1-11667      7.898127e-03  1.117479e-02
## 1-11680      -7.462990e-03  1.738935e-02
## 1-11706      -6.711230e-06  -4.517053e-03
## 1-11731      -1.047569e-02  5.077112e-04
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## 1-11789      -4.019032e-02  -4.858523e-03
## 1-11885      -1.119540e-02  1.905715e-02
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## 1-11927      -1.023289e-02  1.378023e-02
## 1-11935      2.465604e-02  -4.730824e-02
## 1-11935_2    1.783724e-02  1.712820e-02
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## 1-12041      4.902743e-03  -8.641923e-04
## 1-12062      3.760546e-03  7.532871e-03
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## 1-12327      -3.560428e-03  -8.535039e-03
## 1-12356      8.492686e-03  1.202943e-02
## 1-12365      1.609377e-03  -4.247066e-03
## 1-12439      2.628618e-03  1.820856e-03
## 1-12561      1.388600e-02  3.838364e-04
## 1-12572      2.965626e-02  6.985234e-03
## 1-12636      -4.456814e-03  -2.897733e-02
## 1-12681      -3.039134e-02  2.073390e-02
## 1-12704      2.233913e-02  -1.860671e-02
## 1-12713      -9.333000e-04  -2.660989e-02
## 1-12770      1.567372e-02  7.543123e-03
## 1-12784      1.173805e-02  -3.516595e-03
## 1-12827      1.902501e-02  5.654427e-03
## 1-12959      7.760160e-02  -6.362892e-04
## 1-13069      8.177228e-03  -4.019891e-04
## 1-13165      -8.678207e-03  6.829689e-02
## 1-13169      3.299540e-02  7.012611e-02
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## 1-13507      1.257760e-02  2.258341e-03

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## 1-13616      -9.369720e-03 -4.318274e-03
## 1-13748      1.997225e-02  3.383610e-03
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## 1-13839      -1.061040e-02  2.393405e-02
## 1-13885      -1.608853e-03 -1.381798e-02
## 1-13887      -1.154089e-02 -8.921666e-03
## 1-13959      6.543363e-03 -1.364132e-03
## 1-14000      2.395283e-02  4.066109e-03
## 1-14005      -1.253946e-02  1.370190e-02
## 1-14071      -1.218942e-03 -1.453307e-02
## 1-14072      -2.257650e-02 -3.355339e-02
## 1-14078      -1.218942e-03 -1.453307e-02
## 1-14163      5.047728e-03  2.481667e-03
## 1-14187      -1.699715e-02 -1.404746e-02
## 1-14251      7.385091e-02 -9.234472e-02
## 1-14269      -2.681092e-02 -5.522127e-03
## 1-14275      -3.638262e-02 -1.718501e-03
## 1-14287      -1.368839e-03  8.743808e-03
## 1-14287_2    -1.103109e-03 -1.410596e-02
## 1-14397      -5.799609e-02 -1.497762e-02
## 1-14403      2.776002e-02  3.214646e-02
## 1-14459      1.881183e-02  8.041066e-03
## 1-14546      -3.264930e-02 -4.672286e-03
## 1-14609      -1.699715e-02 -1.404746e-02
## 1-14612      -3.148194e-02 -1.328811e-03
## 1-14670      -2.173817e-02 -2.618557e-02
## 1-14764      -2.714731e-02 -2.174808e-03
## 1-14769      2.480639e-02 -8.843518e-03
## 1-14795      1.257760e-02  2.258341e-03
## 1-14820      2.923081e-02  3.152138e-02
## 1-14876      -2.243977e-02 -1.041179e-02
## 1-14940      1.612751e-02  1.352544e-03
## 1-15035      4.528504e-03  1.986167e-03
## 1-15044      -2.111468e-02  4.478165e-03
## 1-15058      -1.130339e-03  9.742431e-03
## 1-15123      1.346792e-02 -3.873625e-02
## 1-15163      1.919978e-02  7.932666e-03
## 1-15174      -1.130339e-03  9.742431e-03
## 1-15186      -9.030928e-03 -2.288049e-03
## 1-15192      4.697553e-02 -1.812270e-02
## 1-15217      -2.313452e-02 -1.112513e-02
## 1-15309      -1.142669e-02 -7.797355e-03
## 1-15336      1.886797e-02  3.970716e-02
## 1-15357      1.109660e-02 -3.788536e-02
## 1-15397      1.458790e-02  5.449593e-03
## 1-15418      3.635874e-02  4.429662e-03
## 1-15447      1.138971e-02 -3.773247e-02
## 1-15448      -1.130339e-03  9.742431e-03
## 1-15544      1.593591e-02  2.195413e-03
## 1-15551      -1.130339e-03  9.742431e-03
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## 1-15611      1.206929e-01 -3.688103e-02
## 1-15628      1.556182e-03 -1.509982e-02
## 1-15660      -8.152502e-03  9.873427e-03

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## 1-15704      9.623581e-03 -4.091784e-02
## 1-15742     -1.038424e-03  1.039303e-02
## 1-15783     -3.306174e-02  2.098742e-02
## 1-15808     -1.038424e-03  1.039303e-02
## 1-15827     -3.453851e-02  2.961209e-02
## 1-15835      4.852166e-04  2.570034e-03
## 1-15876      7.103220e-03 -4.617578e-03
## 1-15876_2    -3.203158e-02 -1.907515e-02
## 1-15883     -1.775629e-02  4.769299e-03
## 1-16005      7.424992e-02  4.313126e-03
## 1-16029      7.424992e-02  4.313126e-03
## 1-16033     -1.291737e-02  1.065975e-02
## 1-16127      4.644294e-02 -4.119415e-02
## 1-16233      3.903270e-02 -3.682225e-02
## 1-16267     -5.158077e-03 -1.609748e-02
## 1-16272      1.302085e-02  4.665840e-03
## 1-16295     -1.030978e-02  2.305778e-02
## 1-16305      1.769726e-03  3.640084e-03
## 1-16318     -1.648676e-02  2.352878e-02
## 1-16349      1.456290e-03 -2.406909e-03
## 1-16423      1.456290e-03 -2.406909e-03
## 1-16448      1.965719e-02 -1.321912e-03
## 1-16473      3.476584e-04  7.544334e-04
## 1-16483      4.130996e-03  3.776675e-04
## 1-16491      1.946196e-03 -6.701962e-03
## 1-16499      8.379990e-03 -2.093660e-03
## 1-16550      2.333224e-02  4.521734e-02
## 1-16583     -5.985286e-03  5.303550e-02
## 1-16609     -4.866816e-03 -1.526119e-02
## 1-16769     -9.266113e-03  1.154009e-02
## 1-16866      6.783065e-03  1.946436e-02
## 1-16879      3.135046e-03 -1.715254e-03
## 1-16926     -1.385400e-02  1.735875e-02
## 1-16942      1.362778e-02  8.507159e-03
## 1-16965      1.382075e-02  5.270666e-03
## 1-16983     -2.687598e-02  2.423088e-02
## 1-17003      1.804560e-02  8.288638e-03
## 1-17051     -6.058319e-03  5.810484e-03
## 1-17102      1.992011e-02  9.233074e-03
## 1-17136     -9.472201e-04 -2.318952e-02
## 1-17163      4.644294e-02 -4.119415e-02
## 1-17318     -3.955684e-03 -1.385236e-02
## 1-17351      3.160246e-03 -1.200320e-03
## 1-17363     -2.716510e-02 -2.896527e-02
## 1-17434     -2.782793e-02 -4.286613e-03
## 1-17436     -2.608990e-02  6.804135e-03
## 1-17511      1.979993e-02  9.292988e-03
## 1-17619      1.561260e-02  5.784980e-03
## 1-17622      2.428389e-02  4.417033e-02
## 1-17632     -4.255488e-03  2.745095e-02
## 1-17675      1.999217e-02 -5.147057e-02
## 1-17771     -3.043015e-03 -1.819941e-02
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## 1-17985      -5.985975e-04 -8.336128e-03
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## 1-18030      -2.479578e-02  2.237911e-02
## 1-18047      5.566448e-03 -5.769905e-03
## 1-18114      2.042151e-02  1.069094e-02
## 1-18133      -1.721810e-02  2.065681e-03
## 1-18164      5.730507e-03 -2.138632e-03
## 1-18199      -2.948999e-02 -4.154050e-02
## 1-18226      2.027731e-03 -1.304393e-02
## 1-18231      1.148253e-02  7.270870e-03
## 1-18269      -2.678025e-02  2.150168e-02
## 1-18286      1.749047e-02  9.271726e-03
## 1-18369      2.322639e-02  8.260399e-03
## 1-18417      4.932151e-03  1.180113e-04
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## 1-18438      1.451171e-03 -2.954735e-03
## 1-18489      -4.155570e-02 -6.699759e-03
## 1-18490      -9.769124e-03 -3.415626e-02
## 1-18519      2.975516e-02  1.373319e-02
## 1-18560      -9.250255e-03 -3.139957e-02
## 1-18597      2.727355e-03 -1.734071e-03
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## 1-18695      7.969303e-03  7.230519e-02
## 1-18721      1.670246e-03 -1.253823e-02
## 1-18774      -2.716510e-02 -2.896527e-02
## 1-18813      -2.744482e-02 -1.454818e-02
## 1-18827      1.225338e-02  2.722900e-02
## 1-18862      -1.597069e-02  2.488607e-02
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## 1-19057      -2.027659e-02 -6.862847e-03
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## 1-19081      2.215452e-03  5.472370e-03
## 1-19087      -1.687949e-02  4.648869e-02
## 1-19135      -9.761621e-03  3.356111e-03
## 1-19143      2.428751e-04 -6.717894e-03
## 1-19179      -2.756082e-02 -4.574595e-04
## 1-19213      -1.962594e-02  2.875659e-02
## 1-19243      -1.181789e-03 -8.729368e-03
## 1-19251      -2.404334e-02 -9.216814e-03
## 1-19347      -2.337256e-02 -8.717564e-03
## 1-19412      -1.447913e-02  4.162068e-02
## 1-19432      -2.795627e-03  8.007354e-03
## 1-19544      8.711937e-04 -5.640906e-03
## 1-19546      1.577980e-02  5.397157e-03
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## 1-19617      -1.367290e-02  3.716042e-02

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## 1-19702      7.886441e-02 -4.000253e-02
## 1-19704      -2.948999e-02 -4.154050e-02
## 1-19704_2    1.210902e-02 -4.922494e-03
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## 1-19818      5.422974e-04 -1.167653e-02
## 1-19864      1.152769e-02  2.229035e-03
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## 1-19932      -1.071250e-02 3.446165e-02
## 1-19985      -2.415715e-02 -2.632744e-02
## 1-20027      -1.951230e-02 8.480979e-04
## 1-20037      -2.927793e-02 3.614491e-02
## 1-20102      -1.367290e-02 3.716042e-02
## 1-20136      -2.406694e-02 -4.388628e-03
## 1-20184      3.709394e-02 8.540641e-03
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## 1-20260      1.110800e-02 3.322665e-03
## 1-20282      4.433353e-03 -2.480918e-02
## 1-20300      -1.826452e-02 3.766476e-02
## 1-20348      -2.157722e-02 -2.199694e-02
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## 1-20490      -7.860006e-03 4.999853e-03
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## 1-20629      -2.991640e-02 -2.868694e-03
## 1-20641      -1.710320e-03 -1.132184e-02
## 1-20688      9.607386e-03 1.150281e-02
## 1-20700      -4.644122e-05 -6.560884e-02
## 1-20733      -8.871133e-03 -5.469764e-03
## 1-20789      5.249284e-04 8.611411e-03
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## 1-20860      3.618321e-02 -1.929860e-02
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## 1-20911      -1.574587e-03 -1.152845e-02
## 1-21038      1.170992e-02 4.125234e-02
## 1-21041      -1.283640e-02 2.603781e-02
## 1-21057      -7.470764e-03 -5.910351e-03
## 1-21102      -1.347034e-02 1.552708e-02
## 1-21117      -3.204613e-03 -1.890150e-02
## 1-21144      -7.426903e-03 -1.639921e-02
## 1-21200      -2.468591e-02 -8.657222e-03
## 1-21217      1.809637e-03 -2.303766e-02
## 1-21266      2.991482e-02 2.466433e-02
## 1-21437      1.107264e-03 -1.531634e-02
## 1-21492      -4.953955e-02 -3.513039e-02
## 1-21551      -1.546013e-02 4.122564e-02
## 1-21585      -6.728950e-03 -2.726644e-03
## 1-21624      1.107264e-03 -1.531634e-02
## 1-21645      2.146088e-03 1.502131e-02

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## 1-22015      -1.827636e-02  4.687172e-02
## 1-22022      -2.889351e-02  -3.008626e-02
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## 1-22145      1.329514e-02  -4.329837e-02
## 1-22208      -6.085238e-03  1.730505e-03
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## 1-22493      1.238590e-03  -7.038550e-03
## 1-22494      2.827445e-03  -1.157486e-02
## 1-22696      -6.659134e-02  -3.924547e-02
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## 1-22842      -1.472755e-03  -1.881648e-02
## 1-22902      -8.205105e-02  8.066614e-03
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## 1-22964      9.046026e-03  -3.521659e-03
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## 1-23017      1.601549e-02  5.997603e-03
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## 1-23163      4.027453e-03  -1.115946e-02
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## 1-23285      9.148099e-02  -3.677239e-02
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## 1-23736      5.448541e-03  2.508768e-03

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## 1-23848 -6.652825e-03 5.060131e-02
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## 1-23884 -5.115891e-03 2.559567e-03
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## 1-23971 -8.124804e-03 -1.214605e-03
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## 1-24079 4.290004e-02 -4.513980e-02
## 1-24117 -2.004567e-02 2.961816e-02
## 1-24132 1.879849e-02 -1.540338e-03
## 1-24141 -2.684266e-03 -6.757462e-03
## 1-24179 2.663759e-02 3.251298e-02
## 1-24285 -2.684266e-03 -6.757462e-03
## 1-24285_2 1.048650e-02 5.404384e-03
## 1-24328 1.968919e-02 -4.448401e-04
## 1-24379 2.196080e-03 9.448437e-03
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## 1-24576 3.049063e-02 2.940955e-02
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## 1-24623 -8.747830e-03 1.336250e-02
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## 1-25266 9.884142e-03 4.884074e-03
## 1-25269 -1.680904e-02 -1.363870e-02
## 1-25289 -6.809290e-02 -3.179521e-02
## 1-25324 1.031299e-01 -2.194635e-02
## 1-25363 -5.460637e-03 1.044103e-04
## 1-25376 2.954193e-03 6.907190e-03
## 1-25392 -1.603285e-02 4.709351e-02
## 1-25424 -6.765504e-04 -2.799583e-02
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## 1-25982 1.769645e-02 1.195385e-02
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## 1-26044 -1.526488e-03 -2.965513e-02
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## 1-26462      -2.196341e-02  1.487369e-05
## 1-26466      -1.357406e-03  -1.264684e-02
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## 1-26593      1.143569e-02  9.210349e-03
## 1-26595      5.019562e-03  4.109094e-03
## 1-26617      -1.329580e-02  -2.439421e-04
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## 1-26799      4.249542e-04  3.013909e-03
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## 1-27118      4.249542e-04  3.013909e-03
## 1-27136      -3.978945e-03  1.141079e-02
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## 1-27727      5.037749e-03  5.778327e-04
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## 1-28921      5.007488e-02  5.903407e-03
## 1-28923      -4.460593e-02  -1.842039e-03
## 1-28967      8.051070e-02  -4.687026e-02
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## 1-29086      -1.782197e-02  -8.325488e-03
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## 1-29173      9.345728e-03  1.843574e-02
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## 1-29273      7.037371e-03  -1.021990e-03
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## 1-29301      1.852201e-02  4.234762e-03
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## 1-30311      -3.528221e-02 -6.981465e-04
## 1-30361      -4.793214e-02 -3.387622e-04
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## 1-32127      -6.926851e-02  1.381107e-03
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## 1-32273      -1.514390e-03  -3.190598e-02
## 1-32345      2.201881e-03  -2.905139e-03
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## 1-32546      2.812365e-02  1.069552e-02
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## 1-32705      -2.037176e-02  8.472066e-03
## 1-32721      1.309603e-02  2.182895e-03
## 1-32730      3.495576e-02  -3.511616e-02
## 1-32831      -1.053558e-03  -3.451088e-03
## 1-32845      4.685503e-03  -3.847440e-03
## 1-32869      3.486497e-04  1.061897e-02
## 1-32915      4.685503e-03  -3.847440e-03
## 1-32962      -5.246081e-03  -2.049678e-02
## 1-32968      3.948877e-03  2.839199e-02
## 1-33027      -1.940565e-02  7.736961e-03
## 1-33032      4.138000e-03  1.461376e-02
## 1-33035      -1.060049e-03  -5.016645e-03
## 1-33064      -3.993097e-02  -4.055978e-03
## 1-33071      -6.534980e-03  -4.112334e-03
## 1-33087      3.932340e-02  -3.008508e-03
## 1-33092      -1.394276e-02  8.783784e-03
## 1-33165      9.472791e-03  6.467838e-03
## 1-33245      4.177945e-02  -5.322951e-02
## 1-33274      -7.058684e-03  -1.463087e-02
## 1-33291      3.756796e-02  -1.982389e-03
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## 1-33337      -5.570756e-02  -3.554254e-03
## 1-33345      3.985824e-02  -1.390529e-02
## 1-33351      8.273513e-03  3.263073e-03
## 1-33374      3.985824e-02  -1.390529e-02
## 1-33416      7.250254e-03  5.245036e-03
## 1-33432      3.591784e-03  6.561650e-04
## 1-33442      -2.462179e-02  -1.929139e-02
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## 1-33540      1.021076e-02  6.016131e-03
## 1-33551      -1.566986e-02  -4.831692e-02
## 1-33615      -3.658805e-02  -3.920903e-03
## 1-33663      4.177945e-02  -5.322951e-02
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## 1-33744      1.541743e-02  -8.054012e-03

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## 1-33829 -1.030374e-03 -2.002420e-02
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## 1-33941 -1.030374e-03 -2.002420e-02
## 1-34021 -1.584133e-02 -7.189049e-03
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## 1-34034 1.694362e-02 2.705536e-03
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## 1-34161 -8.175227e-03 2.853348e-03
## 1-34217 2.176759e-02 2.524387e-04
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## 1-34223 -1.797029e-01 3.142478e-02
## 1-34263 1.541743e-02 -8.054012e-03
## 1-34273 -7.300808e-03 -1.515701e-02
## 1-34390 9.472791e-03 6.467838e-03
## 1-34576 1.239308e-02 5.484852e-03
## 1-34654 8.817991e-03 3.309816e-03
## 1-34680 -3.665127e-02 6.853967e-05
## 1-34687 -1.865402e-02 -1.462256e-02
## 1-34727 -5.993731e-03 -1.611494e-02
## 1-34731 3.054443e-02 -1.504014e-02
## 1-34737 2.993015e-02 -1.878905e-02
## 1-34851 8.817991e-03 3.309816e-03
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## 1-34860 9.746408e-03 1.600821e-03
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## 1-34939 1.186911e-02 3.214148e-03
## 1-34986 2.429913e-02 -2.989261e-02
## 1-34987 3.912949e-03 1.460061e-02
## 1-34989 -9.015628e-03 -6.060484e-02
## 1-35012 1.549730e-03 5.171227e-03
## 1-35022 2.170461e-02 -4.078710e-02
## 1-35041 3.087777e-02 -1.680042e-02
## 1-35058 1.741814e-03 -2.322762e-02
## 1-35064 1.608603e-02 2.762945e-03
## 1-35079 7.282418e-02 2.034391e-02
## 1-35119 -2.387689e-02 -1.258116e-02
## 1-35132 -2.571719e-02 1.240428e-02
## 1-35173 -3.389969e-02 -2.272139e-02
## 1-35210 1.747315e-02 1.639814e-02
## 1-35344 -2.497292e-02 -2.909488e-02
## 1-35368 -7.300808e-03 -1.515701e-02
## 1-35410 -2.073149e-03 8.929434e-03
## 1-35413 -2.387689e-02 -1.258116e-02
## 1-35423 -2.173542e-03 -9.077956e-03
## 1-35437 -6.825336e-03 -2.703532e-02
## 1-35442 -2.571719e-02 1.240428e-02
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## 1-35538 8.961927e-03 -1.514162e-03
## 1-35560 3.742328e-03 1.761876e-03
## 1-35586 -5.188946e-03 1.002577e-02
## 1-35607 -1.439457e-02 -1.649246e-02
## 1-35651 -1.120084e-03 3.736800e-02

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## 1-35965      -2.563728e-02  2.831049e-05
## 1-35996      -7.729069e-03  3.672838e-02
## 1-36122      1.031315e-03 -3.191532e-03
## 1-36131      -1.748320e-02  9.710522e-04
## 1-36133      3.642021e-02 -3.395816e-02
## 1-36237      1.026966e-01  3.300623e-03
## 1-36278      -3.451317e-02 -2.365579e-02
## 1-36383      7.458446e-02 -4.964035e-02
## 1-36392      5.121650e-03 -4.754789e-03
## 1-36428      -2.457242e-02 -2.758431e-02
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## 1-36485      2.181249e-02  3.619298e-04
## 1-36497      -5.301181e-03  2.203316e-03
## 1-36497_2    -4.147915e-04 -6.892529e-03
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## 1-36525      2.181249e-02  3.619298e-04
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## 1-37089      -1.089793e-02  1.520704e-02
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## 1-37138      -1.058361e-02  6.047504e-03
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## 1-37963     -6.920342e-03  8.570937e-03
## 1-38021     -2.988437e-02 -4.622832e-03
## 1-38085      1.589492e-02 -4.747223e-04
## 1-38117      7.755837e-04 -6.445081e-03
## 1-38120     -1.244511e-02  6.297823e-03
## 1-38173     -3.678568e-02 -8.739540e-03
## 1-38253      6.705980e-03  5.632289e-03
## 1-38311      8.972396e-04 -1.769357e-03
## 1-38450      4.158240e-02  6.542417e-03
## 1-38472     -3.311081e-02  1.790898e-02
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## 1-38800     -1.254505e-02 -4.416137e-02
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## 1-39077     -2.395236e-02 -6.523181e-03
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## 1-39145      4.444064e-03  6.947745e-03
## 1-39154     -9.290601e-03  2.769319e-02
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## 1-39423     -3.781306e-03  2.424639e-02
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## 1-39544     -4.248219e-02 -8.315368e-03
## 1-39576     -6.800678e-03 -1.413757e-02
## 1-39642      8.325131e-02 -4.082406e-02
## 1-39648     -4.807067e-02 -3.207547e-02
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## 1-39753      4.644294e-02 -4.119415e-02
## 1-39839     -8.576274e-02 -3.326377e-04

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## 1-39936_2    2.025856e-03  -8.629143e-04
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## 1-40179      -2.998378e-03  -7.161401e-03
## 1-40185      -1.310319e-02  2.658390e-03
## 1-40191      1.762301e-02   5.221084e-03
## 1-40242      -9.253670e-03  -2.229936e-02
## 1-40282      3.143752e-02   -2.938305e-02
## 1-40286      5.510760e-03   -3.080273e-03
## 1-40288      1.762301e-02   5.221084e-03
## 1-40311      -1.117342e-02  5.247423e-02
## 1-40380      4.871261e-03   -2.932332e-03
## 1-40424      1.426910e-02   4.339647e-03
## 1-40538      1.818405e-02   4.055230e-03
## 1-40549      -4.001901e-03  -1.229847e-02
## 1-40568      -1.161455e-03  -5.263494e-03
## 1-40578      2.296661e-02   -2.049024e-03
## 1-40613      5.878830e-03   1.625536e-03
## 1-40622      -1.548660e-02  3.617737e-03
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## 1-40774      2.050961e-03   -2.116327e-03
## 1-40784      -2.618353e-02  -2.590102e-02
## 1-40785      2.869692e-02   -1.222531e-02
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## 1-40873      4.607590e-02   -5.659380e-02
## 1-40935      -2.155991e-02  -9.177052e-04
## 1-40956      -2.465244e-02  2.145418e-02
## 1-41079      2.638966e-02   7.449550e-03
## 1-41253      -2.642519e-02  1.400209e-02
## 1-41254      2.006327e-03   -1.512577e-03
## 1-41257      -2.490450e-02  -1.465886e-02
## 1-41258      1.420559e-03   -8.514163e-03
## 1-41293      -4.800187e-02  -4.514850e-02
## 1-41309      4.563187e-02   -1.695449e-02
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## 1-41420      -2.136072e-02  7.124887e-03
## 1-41442      -1.965940e-02  2.812957e-04
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## 1-41663      8.933026e-03   2.720269e-02
## 1-41691      -4.896165e-03  -1.421225e-02
## 1-41744      1.293251e-02   1.141561e-03
## 1-41747      -4.717548e-02  -4.351564e-02
## 1-41771      -2.669606e-02  -2.828832e-02
## 1-41773      3.232740e-03   1.294841e-02
## 1-41777      -2.893270e-02  -6.900595e-03
## 1-41801      -1.167004e-02  3.024432e-03
## 1-41832      -9.538532e-03  1.751104e-03
## 1-41892      1.200642e-02   1.600845e-02
## 1-41900      3.275747e-04   7.235250e-03

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## 1-42024      -3.653382e-03 -8.752595e-03
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## 1-42331       6.348860e-03  2.285928e-02
## 1-42408      -1.059424e-02 -4.116454e-02
## 1-42527       1.566799e-02 -8.070494e-03
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## 1-42762      -1.707556e-02 -5.948561e-02
## 1-42764       5.667382e-03 -9.002876e-03
## 1-42799       1.459546e-02  1.721357e-02
## 1-42852       1.510380e-02 -1.464875e-03
## 1-42903       6.550069e-02 -6.944157e-02
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## 1-43623       2.808476e-03 -5.339467e-03
## 1-43655       1.140552e-02  2.305689e-02
## 1-43774       3.906929e-02 -3.346758e-02
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## 1-43862       1.908349e-03  2.705034e-02
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## 1-43955       7.478663e-03 -2.264928e-03
## 1-44137       1.881095e-02 -1.733443e-02
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## 1-44179      -1.087418e-02 -1.586801e-02
## 1-44214       3.139864e-02  1.095015e-02
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## 1-44370      -4.431511e-02 -1.480537e-02
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## 1-44407      -1.240212e-03 -1.868588e-03
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## 1-44491       7.347088e-02 -2.890357e-02
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## 1-44751      -6.309586e-03  5.434442e-03
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## 1-44816      -6.945506e-03  1.478509e-02

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## 1-44895      -4.320294e-02 -7.549076e-03
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## 1-45083      -1.991418e-03  -1.794167e-02
## 1-45120      -7.001291e-03  -4.195186e-02
## 1-45122      -2.116543e-02  1.816633e-03
## 1-45136      -5.067303e-03  -1.731956e-02
## 1-45197      9.710444e-04  -1.105429e-02
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## 1-45271      -9.565188e-04  -5.086360e-03
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## 1-45367      -3.045665e-02  -2.787065e-02
## 1-45419      -2.161521e-02  -1.955554e-02
## 1-45433      -2.116543e-02  1.816633e-03
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## 1-46828 -1.610345e-02 3.138463e-02
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## 2-58586	-4.586919e-02	-1.636671e-02
## 2-58598	-2.428817e-03	1.952255e-02
## 2-58629	-4.246570e-02	-2.851129e-02
## 2-58652	8.744702e-03	4.141533e-03
## 2-58696	9.590730e-03	3.047844e-03
## 2-58828	7.808492e-03	-2.063800e-03
## 2-58867	2.031235e-03	-6.055244e-03
## 2-58920	-1.297199e-01	4.253602e-02
## 2-58929	1.046219e-02	2.987060e-03
## 2-58931	-2.452377e-03	-2.035709e-04
## 2-58939	-7.094442e-03	9.317865e-03
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## 2-58978	8.473586e-03	-1.806232e-03
## 2-58999	-2.452377e-03	-2.035709e-04
## 2-59000	8.024510e-03	2.999161e-03
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## 2-59171	9.548834e-03	3.649546e-03
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## 2-59274	-2.979719e-02	3.338973e-02
## 2-59275	-4.433531e-03	2.203873e-02
## 2-59308	-5.778677e-03	-4.884664e-02
## 2-59323	-2.057215e-02	-2.028477e-02
## 2-59389	2.036842e-02	4.565596e-02
## 2-59394	7.187542e-03	1.920201e-02
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## 2-59425	9.632133e-03	3.940634e-03
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## 2-59581  7.787327e-03 -1.816474e-03
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## 2-59722 -3.054537e-02  3.279734e-02
## 2-59805  4.640219e-02 -1.781421e-02
## 2-59863 -1.533953e-02  3.167813e-02
## 2-59864  3.206638e-02  1.574439e-02
## 2-59867 -2.515395e-04  3.345174e-03
## 2-59871  1.832110e-03 -6.842355e-03
## 2-59871_2 -2.775225e-03 -2.451194e-02
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## 2-59999  5.274660e-02  6.508455e-03
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## 2-61769  2.688350e-03 -5.713829e-03
## 2-61867 -1.834627e-04  5.119319e-03
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## 2-62084      6.059905e-03 -1.302090e-03
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## 2-62159      2.070625e-02  9.697781e-03
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## 2-68271      1.957439e-03 -4.601196e-03
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## 2-71508 1.580753e-03 -5.512783e-03
## 2-71510 1.376838e-02 3.261170e-03
## 2-71514 -1.605171e-03 1.799261e-03
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## 2-71653 -4.235392e-03 3.683400e-03
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## 2-71846 1.776429e-02 -1.123264e-02
## 2-71873 -4.625752e-02 -8.217845e-03
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## 2-71902 -4.913473e-02 2.202771e-02
## 2-71958 9.097224e-03 2.666402e-03
## 2-72042 5.843295e-03 1.755843e-02
## 2-72170 1.580753e-03 -5.512783e-03
## 2-72196 -7.148401e-02 -1.637909e-02
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## 2-72463 9.072752e-03 2.524316e-03
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## 2-73827      2.365834e-02  1.370731e-02
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## 2-74072      -1.570750e-02  -3.114720e-02
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## 2-78844      9.665024e-02 -3.793432e-02
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## 2-80553      1.191065e-03  -9.986513e-03
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## 2-82592      -3.318241e-02 -6.042627e-03
## 2-82598      -7.857479e-03 -1.678525e-02
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## 2-83012      2.844367e-02  1.275518e-02
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## 2-83033      -2.887502e-02 -5.027093e-03
## 2-83176      -5.076743e-02  7.246386e-03
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## 2-83219      -1.870342e-02  4.642841e-02
## 2-83283      -5.187083e-02 -2.327843e-02
## 2-83314      -4.560871e-03 -1.185789e-02
## 2-83318      1.760064e-02  9.217972e-03
## 2-83333      7.118527e-03  1.924435e-02
## 2-83365      2.643772e-02 -3.444190e-02
## 2-83370      1.195100e-02  4.244524e-03
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## 2-83470      6.181748e-03 -2.861591e-03
## 2-83495      5.562337e-04 -1.864426e-02
## 2-83572      1.749734e-02  6.715375e-03
## 2-83633      9.660434e-03  8.126748e-03
## 2-83712      4.112341e-02 -1.440982e-02
## 2-83725      7.595060e-03  1.186385e-02
## 2-83730      2.909316e-02  2.406925e-03
## 2-83788      -3.517710e-02  3.074673e-02
## 2-83843      9.660434e-03  8.126748e-03
## 2-83849      -7.942448e-03 -1.812743e-02
## 2-83871      9.419140e-02 -1.889610e-02
## 2-83921      -2.376652e-02 -1.932452e-02
## 2-83924      -2.127953e-02 -1.038090e-02
## 2-83940      -2.235193e-02 -1.833537e-02
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## 2-84003      1.747287e-02  6.573289e-03

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## 2-84184      3.642964e-03  5.775927e-02
## 2-84185     -5.149304e-03  2.165482e-02
## 2-84265     -5.194525e-03  1.182088e-02
## 2-84323     -1.980428e-02 -2.312841e-02
## 2-84345      4.781778e-03 -4.832203e-04
## 2-84415     -4.016467e-02 -7.580274e-03
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## 2-84507      8.578467e-03  1.225318e-02
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## 2-84601     -1.765837e-02  3.024503e-02
## 2-84685     -1.002144e-02  1.851233e-03
## 2-84700     -2.222079e-02  6.782228e-02
## 2-84727     -5.078477e-03  1.207887e-02
## 2-84737     -1.136967e-02  4.547476e-02
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## 2-85406     -2.869012e-02 -1.372690e-02
## 2-85490     -2.038028e-02 -1.777936e-02
## 2-85492      2.013315e-02  3.986402e-02
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## 2-85718     -3.942975e-02 -4.702799e-03
## 2-85732      8.849863e-02 -4.582885e-02
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## 2-86025     -1.468217e-02  1.982547e-02
## 2-86051     -1.152409e-03 -1.591521e-03
## 2-86089     -1.150551e-02  9.300908e-03
## 2-86099     -2.112846e-02 -1.837175e-02

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## 2-86246      7.613765e-03  -1.075004e-02
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## 2-87215      1.822860e-03 -1.342009e-02
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## 2-88274     -6.717054e-03  7.423127e-04
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## 2-88584      -1.182477e-02  6.833479e-03
## 2-88628      -7.310852e-03 -1.783476e-02
## 2-88643      -1.170630e-02  2.029149e-02
## 2-88683      6.686293e-02 -1.184536e-03
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## 2-88879      -5.304000e-03 -1.131770e-02
## 2-88905      -1.812847e-02 -1.522058e-02
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## 2-89049      1.249381e-03 -4.109658e-03
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## 2-89942      -4.256562e-02 -3.360493e-02
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## 2-90212      -6.675602e-03  1.245714e-02
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## 2-91583      2.521254e-02  8.053672e-03
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## 2-91691      -2.168555e-02  4.341291e-03
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## 2-92390      -2.280257e-02  1.054586e-01
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## 2-92440      -8.888266e-03  1.062032e-03
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## 2-92467      -1.601070e-02 -4.659423e-03
## 2-92481      1.629898e-03 -9.256218e-03
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## 2-92864	1.828366e-02	-6.962135e-03
## 2-92874	-5.013544e-03	-3.734721e-03
## 2-92986	-1.151099e-02	9.156426e-03
## 2-93010	-8.326809e-02	7.608297e-02
## 2-93018	1.370736e-02	6.736344e-03
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## 2-93203	2.573170e-03	9.904588e-03
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## 2-93711	-1.126832e-02	2.451535e-03
## 2-93713	-3.217620e-03	4.460133e-02
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## 2-94167	-1.853072e-03	-1.309009e-03
## 2-94183	1.473707e-02	5.231406e-03
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## 2-94898 -2.976274e-02 5.096203e-03
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## 2-94994 -8.939507e-03 -2.246436e-02
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## 2-95323 -2.149976e-02 -2.113399e-02
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## 2-95369 2.865103e-04 -4.805560e-02
## 2-95425 2.109020e-03 6.921597e-03
## 2-95432 6.016222e-03 2.777235e-02
## 2-95559 -1.574393e-02 3.415629e-03
## 2-95568 -4.179688e-03 -2.811397e-02
## 2-95575 5.897983e-02 1.001873e-01
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## 2-95703 -3.526513e-03 -2.592390e-02
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## 2-95823 3.231272e-03 1.853640e-02
## 2-95853 -8.717203e-03 -2.216465e-02
## 2-95887 1.723122e-02 8.745669e-03
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## 2-95933 -1.829622e-02 -2.802123e-02
## 2-95997 4.643022e-03 1.557319e-02
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## 2-96091 1.788606e-02 6.270632e-03
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## 2-97288      -1.122031e-02 -5.210676e-03
## 2-97362      -3.346254e-03 -1.434785e-02
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## 3-100487     4.431580e-02  -2.581344e-02
## 3-100502    -3.904391e-02   4.673500e-03
## 3-100509     2.215587e-02  -1.767769e-02
## 3-100515     8.209580e-03  -4.866929e-03
## 3-100567     2.698227e-03   1.212943e-02
## 3-100644     4.431580e-02  -2.581344e-02
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## 3-101022     1.038560e-02   1.494356e-02
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## 3-108871 -4.218839e-03 -6.746892e-03
## 3-108871_2 1.061301e-02 4.018549e-02
## 3-108883 -2.525399e-02 -2.942660e-02
## 3-108884 -6.560041e-03 -4.971881e-03
## 3-108920 1.533506e-02 2.253333e-03
## 3-108944 -8.324123e-04 4.431122e-04
## 3-109005 1.706316e-03 -1.127253e-02
## 3-109091 -9.175424e-03 2.410503e-02
## 3-109120 -3.969862e-02 -3.421821e-02
## 3-109136 -3.875300e-02 3.241970e-03
## 3-109156 -3.875300e-02 3.241970e-03
## 3-109234 -1.330431e-02 4.826511e-02
## 3-109238 8.778410e-02 -1.126880e-02
## 3-109289 1.908206e-02 3.492083e-03
## 3-109370 -3.875300e-02 3.241970e-03
## 3-109466 2.566072e-02 7.639594e-03
## 3-109482 1.162220e-02 2.951064e-03
## 3-109489 1.458640e-02 2.680448e-03
## 3-109530 3.977765e-03 -1.000187e-02
## 3-109536 -7.028858e-03 -4.124634e-02
## 3-109552 2.259746e-03 4.717739e-03
## 3-109555 1.206875e-02 -2.006030e-03
## 3-109648 -1.738731e-02 4.008499e-02

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## 3-109957      1.160178e-02  -2.672331e-02
## 3-109964      3.245373e-02  -2.715872e-02
## 3-110011      3.052950e-03  -5.011026e-03
## 3-110036      3.245373e-02  -2.715872e-02
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## 3-110110     -4.652051e-02  -7.221876e-03
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## 3-110465      3.602562e-04  -5.352749e-03
## 3-110582     -2.506733e-03  -9.455120e-03
## 3-110598     -4.179583e-04  -1.469528e-02
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## 3-110959      1.150023e-02  -3.343844e-03
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## 3-111049     -3.636426e-02  -9.729257e-03
## 3-111056      1.070917e-02  7.629753e-03
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## 3-111110     -3.031620e-02  -7.293141e-03
## 3-111112     -1.583013e-02  -2.908921e-03
## 3-111296     -2.498074e-02  8.953285e-05
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## 3-111394     -4.949615e-03  9.103036e-03
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## 3-111454     -1.352008e-02  3.715815e-02
## 3-111455     -5.329890e-04  4.628103e-03
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## 3-111641     -1.796586e-02  -6.743143e-03
## 3-111653     -2.577648e-02  4.095253e-02
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## 3-111722      6.084367e-03  1.641428e-02
## 3-111737     -1.201600e-02  7.335846e-02
## 3-111854     -2.999390e-02  -3.039549e-02
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## 3-112100      1.218556e-02  4.017130e-03
## 3-112151      7.366290e-03  1.888995e-02
## 3-112164      -3.173943e-02 -2.739351e-02
## 3-112241      -1.835827e-03  4.563293e-04
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## 3-112265      -3.399277e-02 -5.356029e-03
## 3-112276      -8.424430e-03  2.819777e-02
## 3-112279      2.053897e-02  -2.099694e-03
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## 3-112321      3.913849e-02  1.120479e-02
## 3-112329      -8.082475e-03  6.783834e-02
## 3-112341      -2.648414e-03  6.042267e-03
## 3-112350      -1.592964e-02  -1.038791e-02
## 3-112366      4.914366e-02  -4.033150e-02
## 3-112611      -2.143751e-03  6.259163e-03
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## 3-113421      1.848044e-02  5.252910e-03
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## 3-114035      1.261452e-02  3.743070e-03
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## 3-114358      -4.354842e-02 -5.546628e-02
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## 3-114904      1.071285e-02 -2.576154e-02
## 3-114948      -1.462908e-02 -5.926654e-03
## 3-114977      1.177383e-02  2.636501e-02
## 3-114985      6.404782e-04  1.310966e-02
## 3-115024      1.549051e-02  1.177885e-02
## 3-115043      -4.319799e-03  1.137475e-02
## 3-115063      -8.695417e-03 -6.625854e-03
## 3-115130      -2.757135e-02 -1.969192e-03
## 3-115198      -4.500792e-03 -1.109385e-03
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## 3-115980      2.531811e-02  6.156670e-02
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## 3-116192      4.697817e-03  5.432971e-03
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## 3-116649    -2.876365e-02  2.874002e-02
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## 3-116697    -3.841316e-03  3.334131e-03
## 3-116746    -2.249014e-03  -7.942113e-03
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## 3-116808    1.643596e-02  3.417576e-03
## 3-116857    1.147083e-03  -3.241782e-02
## 3-116923    8.585200e-02  -3.861695e-03
## 3-116926    5.194341e-03  -4.141647e-03
## 3-116942    -6.729715e-03  -2.184569e-02
## 3-117011    1.823440e-02  -5.730185e-03
## 3-117025    1.068661e-02  3.569157e-02
## 3-117074    -5.483449e-03  -3.605497e-03
## 3-117088    5.028529e-03  6.030713e-03
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## 3-117201    8.412954e-03  -1.199126e-03
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## 3-117223    -4.680070e-03  -4.023914e-03
## 3-117238    -1.030037e-02  -1.385604e-02
## 3-117305    -2.018658e-02  -1.796410e-02
## 3-117337    -6.847112e-03  4.538096e-02
## 3-117375    -4.857829e-03  -1.057590e-03
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## 3-117452    -2.480344e-02  -2.187632e-03
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## 3-117480    -1.269841e-02  8.651731e-03
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## 3-117784    -8.536596e-03  4.878777e-02
## 3-117785    -3.563061e-02  -9.797275e-03
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## 3-117845    -6.220718e-03  -5.972667e-03
## 3-117874    -2.312977e-02  -2.937009e-02
## 3-117903    9.738672e-04  -4.419226e-03
## 3-117909    -1.184757e-02  2.024167e-02
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## 3-117970    8.416011e-04  -6.871899e-03
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## 3-118147    -1.273731e-02  8.029297e-03
## 3-118218    1.113082e-02  -5.951486e-02
## 3-118232    -2.152136e-03  -6.093269e-03
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## 3-118498     -2.597153e-02  -5.281054e-03
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## 3-118513     -5.045871e-03   4.330705e-02
## 3-118605      1.325690e-03   8.566902e-03
## 3-118650     -6.740421e-03  -1.320735e-02
## 3-118691     -1.265250e-02   9.188059e-03
## 3-118699     -1.515268e-03  -7.556203e-04
## 3-118717      1.476044e-03  -1.971463e-03
## 3-118762     -5.306063e-03  -3.039259e-03
## 3-118770      8.032540e-04  -1.044422e-02
## 3-118788     -7.145587e-04  -4.333221e-03
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## 3-119507      1.344771e-03  -7.652401e-03
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## 3-119610      8.981032e-03   1.775382e-03
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## 3-119708      1.717033e-03  -4.505239e-03
## 3-119717      9.854127e-03   1.961055e-03
## 3-119739      3.060205e-03  -3.375660e-03
## 3-119752     -1.271086e-02   7.633498e-03
## 3-119796     -1.793131e-02   3.911502e-02
## 3-119904     -1.227742e-01  -4.125759e-02
## 3-119980      3.284622e-03  -2.912660e-03
## 3-119983      7.825844e-03  -1.487550e-03
## 3-120057      9.300299e-03   6.194568e-03
## 3-120081     -7.736461e-03  -1.237615e-03
## 3-120136      1.043761e-02   1.005405e-03
## 3-120158      4.604110e-02  -1.605380e-02

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## 3-120281      -3.856167e-03  4.099976e-03
## 3-120306      4.612314e-02  -4.418331e-02
## 3-120381      1.113815e-02  4.373508e-02
## 3-120388      8.327500e-03  1.151617e-02
## 3-120457      1.486950e-02  4.885349e-03
## 3-120468      1.377432e-02  2.580424e-02
## 3-120503      4.899877e-03  2.416021e-02
## 3-120520      1.154160e-02  1.321426e-03
## 3-120550      -3.146611e-04  9.229458e-04
## 3-120631      -5.759687e-03  1.308718e-02
## 3-120719      -1.186642e-02  -5.713651e-02
## 3-120803      7.893037e-03  -7.380651e-03
## 3-120821      5.351634e-03  2.457058e-02
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## 3-120919      5.218179e-03  -5.807702e-03
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## 3-120979      -3.326716e-03  -9.982359e-03
## 3-121047      1.545217e-02  9.798117e-03
## 3-121106      -3.680882e-03  4.790395e-03
## 3-121114      -1.472100e-02  3.322488e-02
## 3-121173      9.051848e-03  -1.779274e-03
## 3-121195      -2.465463e-02  1.871225e-02
## 3-121321      1.920913e-02  3.221610e-03
## 3-121358      1.759826e-03  1.392246e-02
## 3-121366      -1.365811e-02  -9.125358e-03
## 3-121384      -6.407691e-03  -9.870560e-03
## 3-121411      -1.162146e-02  2.316771e-02
## 3-121436      -9.427212e-04  -1.593578e-03
## 3-121471      -2.101765e-02  -1.104540e-02
## 3-121495      2.955052e-02  5.343624e-02
## 3-121498      4.604110e-02  -1.605380e-02
## 3-121560      -2.082958e-02  -2.036568e-02
## 3-121572      -2.082958e-02  -2.036568e-02
## 3-121608      4.670869e-02  -3.381740e-02
## 3-121619      2.596655e-03  5.686429e-03
## 3-121656      1.246276e-02  4.623194e-03
## 3-121677      1.024488e-02  1.105810e-02
## 3-121703      -2.174284e-02  -1.373618e-02
## 3-121765      -1.407053e-03  5.133703e-03
## 3-121841      -1.112963e-03  -6.234372e-03
## 3-121965      -4.747688e-02  -3.807832e-02
## 3-121986      -3.120422e-02  2.057357e-02
## 3-122003      -1.240054e-03  -8.352731e-03
## 3-122060      4.484903e-03  1.469610e-02
## 3-122144      1.381469e-02  -4.921375e-03
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## 3-122191      3.335650e-03  1.109837e-02

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## 3-122209      3.335650e-03  1.109837e-02
## 3-122209_2   -1.302523e-03 -1.592268e-03
## 3-122287      3.335650e-03  1.109837e-02
## 3-122288      6.206754e-03 -3.136938e-02
## 3-122292      1.521867e-02  1.217842e-02
## 3-122294      1.333899e-02 -3.784214e-04
## 3-122360      7.870162e-03  3.569287e-03
## 3-122529      1.784536e-02 -1.158397e-04
## 3-122576      5.949148e-02 -4.628907e-02
## 3-122620      8.052042e-03  3.243079e-03
## 3-122691      1.973288e-02  7.232389e-03
## 3-122726      -1.535664e-02 5.635287e-03
## 3-122794      -2.368694e-02 -2.335535e-02
## 3-122833      6.186216e-02 -4.914315e-02
## 3-122869      -6.745610e-03 -3.555528e-03
## 3-122908      -4.221603e-03 -4.033649e-03
## 3-122938      -1.716209e-02 -1.013747e-02
## 3-122940      -6.745610e-03 -3.555528e-03
## 3-122942      -1.095176e-02 1.019720e-02
## 3-122980      -1.730961e-02 -8.936575e-03
## 3-123217      4.214406e-03 -7.368322e-03
## 3-123248      -2.329164e-03 4.402178e-02
## 3-123290      5.944054e-04 -7.110337e-03
## 3-123303      -8.238562e-03 -4.336175e-02
## 3-123317      8.239787e-03  4.191883e-03
## 3-123447      -7.174021e-03 -3.400616e-03
## 3-123452      5.403088e-04 -6.664301e-03
## 3-123620      1.341594e-02  8.133941e-03
## 3-123718      -2.428113e-02 1.384916e-03
## 3-123749      6.595824e-03  1.672552e-02
## 3-123785      4.118222e-02 -2.469832e-02
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## 3-123841      -1.827420e-02 1.991420e-02
## 3-123856      8.391063e-04 -5.185764e-03
## 3-123863      1.577332e-02  2.520425e-02
## 3-123867      3.690465e-02  3.067322e-03
## 3-123871      -2.736716e-02 -4.288569e-03
## 3-123946      1.821506e-02 -9.206295e-03
## 3-123994      -7.174021e-03 -3.400616e-03
## 3-124005      -3.586791e-03 4.115011e-03
## 3-124033      -1.319545e-02 2.068301e-02
## 3-124064      -7.174021e-03 -3.400616e-03
## 3-124278      -3.514576e-02 -3.210487e-02
## 3-124281      -3.480073e-03 2.846323e-03
## 3-124292      8.613448e-02 -5.863684e-02
## 3-124370      -7.153663e-03 -1.492226e-03
## 3-124498      1.188698e-02 1.129870e-02
## 3-124545      -7.185708e-05 2.621820e-03
## 3-124697      -2.095405e-03 1.090709e-03
## 3-124703      -7.185708e-05 2.621820e-03
## 3-124741      -1.918854e-02 -9.944058e-03
## 3-124816      4.670869e-02 -3.381740e-02
## 3-124850      1.035397e-03 -6.866778e-03
## 3-124852      1.762791e-02 2.925936e-02

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## 3-124855      2.034849e-02  7.010026e-03
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## 3-124924      4.571385e-02  -3.042176e-02
## 3-124924_2    -3.234689e-02  -1.921244e-03
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## 3-125008      -2.095405e-03  1.090709e-03
## 3-125011      -1.461160e-03  -5.092664e-03
## 3-125048      2.068889e-03  1.102831e-03
## 3-125049      -1.089113e-02  5.273030e-03
## 3-125074      -2.096306e-02  2.258061e-02
## 3-125082      -1.761555e-02  1.611189e-03
## 3-125106      -7.601846e-03  -1.976196e-03
## 3-125123      2.610714e-02  -2.635355e-02
## 3-125175      -8.257019e-02  2.349213e-02
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## 3-125269      -3.202516e-03  -9.995126e-03
## 3-125326      -1.138943e-02  2.146201e-03
## 3-125420      6.138117e-03  2.824762e-02
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## 3-125629      4.513048e-02  -2.821550e-02
## 3-125632      -8.819858e-03  3.013262e-02
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## 3-125880      3.063323e-03  1.048873e-02
## 3-125884      5.286663e-02  -4.310602e-02
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## 3-126041      -1.820056e-02  -1.553567e-02
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## 3-126465      -5.319112e-03  -6.699827e-03
## 3-126556      4.071607e-02  9.840014e-03
## 3-126562      5.428932e-03  -2.779602e-02
## 3-126570      2.474019e-03  9.826330e-03
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## 3-126716      5.454338e-02 -3.011435e-02
## 3-126744      3.143453e-02  1.252410e-02
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## 3-126757     -4.063521e-03  2.619257e-02
## 3-126782      1.754548e-02 -9.576611e-03
## 3-126793     -3.062940e-02 -4.038378e-02
## 3-126815     -3.455295e-03 -3.964945e-03
## 3-126822     -4.903841e-02  2.014391e-02
## 3-126825      4.309388e-02  9.564376e-03
## 3-126831      1.879686e-02 -1.124893e-02
## 3-126873     -2.126815e-03  3.653451e-02
## 3-126874      2.972777e-02  2.097105e-02
## 3-126994     -5.638830e-03  3.410602e-02
## 3-127007      1.916464e-02  4.153756e-02
## 3-127088      2.131700e-02  9.053309e-03
## 3-127166      2.404524e-02  1.009619e-02
## 3-127174      9.909760e-02 -7.180262e-02
## 3-127194     -1.680311e-03 -6.352564e-03
## 3-127374     -3.233147e-02  1.609914e-02
## 3-127417      4.624411e-02  1.780083e-02
## 3-127431     -7.424649e-03  2.430205e-02
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## 3-128046      2.441897e-02 -3.677906e-02
## 3-128052     -6.696830e-03 -1.049239e-02
## 3-128099      5.447372e-02 -3.387746e-02
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## 3-128512      6.748981e-02 -2.813527e-04
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## 3-128605     -3.012736e-04 -6.704679e-03
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## 3-128622     -3.916171e-02  1.133492e-03
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## 3-128698      1.342362e-02  2.621040e-02

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## 3-128703 -4.159741e-02 2.399150e-03
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## 3-128762 -2.752563e-02 2.335294e-02
## 3-128765 4.131550e-02 -1.441001e-02
## 3-128878 -5.129162e-03 1.189086e-03
## 3-128935 1.230147e-03 -1.379063e-02
## 3-128948 -1.994439e-02 3.653180e-02
## 3-128983 4.131550e-02 -1.441001e-02
## 3-129011 -1.469580e-02 1.011667e-02
## 3-129030 9.431836e-04 6.100752e-03
## 3-129045 -3.127552e-02 -2.803644e-03
## 3-129057 -3.676907e-03 -5.609741e-03
## 3-129068 -2.946564e-02 -8.894034e-03
## 3-129087 1.117633e-02 -1.320737e-03
## 3-129105 -4.200213e-02 2.244101e-03
## 3-129181 -1.480671e-03 -3.274760e-02
## 3-129251 -1.110948e-02 -4.272363e-03
## 3-129283 -3.532780e-03 -9.149922e-03
## 3-129306 -3.931654e-02 -3.128370e-03
## 3-129320 -1.949624e-03 7.853070e-03
## 3-129386 4.188579e-02 1.025844e-02
## 3-129396 5.286629e-03 4.822237e-03
## 3-129408 -4.131307e-03 -5.757656e-02
## 3-129493 5.505059e-02 -4.546179e-02
## 3-129508 -5.766310e-02 -1.874070e-02
## 3-129557 1.433255e-02 -1.477988e-03
## 3-129632 3.523008e-02 -1.463378e-02
## 3-129654 -3.587226e-03 -8.012010e-03
## 3-129684 -2.245851e-02 1.043312e-02
## 3-129839 3.494152e-02 1.357003e-02
## 3-129853 -1.626010e-02 -9.561261e-03
## 3-129908 -1.600897e-02 -6.666547e-03
## 3-129956 -6.946633e-02 -1.658774e-02
## 3-129981 -1.365100e-02 -6.812710e-03
## 3-130069 -1.387986e-02 -5.514310e-03
## 3-130072 4.075736e-03 1.410251e-02
## 3-130099 -1.027355e-02 -4.384019e-02
## 3-130100 -4.882278e-03 3.407435e-02
## 3-130216 1.394637e-02 2.576998e-02
## 3-130245 -5.653538e-02 -4.510384e-03
## 3-130276 8.459831e-04 2.579891e-04
## 3-130295 4.861991e-02 -2.939151e-02
## 3-130348 -1.115248e-02 3.075831e-02
## 3-130444 -7.007852e-02 -9.473187e-04
## 3-130456 5.047769e-02 -4.241110e-02
## 3-130541 -2.087960e-02 -9.270656e-03
## 3-130590 5.516813e-03 -3.664967e-03
## 3-130629 9.695685e-03 -2.949126e-03
## 3-130644 6.519983e-03 -4.653313e-03
## 3-130661 -2.820981e-03 -1.016264e-03
## 3-130672 -2.477188e-02 7.401773e-04
## 3-130687 -2.268104e-02 -1.064270e-02
## 3-130733 -4.310447e-03 -9.120700e-04

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## 3-130780      9.705324e-03 -7.912150e-04
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## 3-130877     -2.970662e-03 -1.295711e-03
## 3-130896     -3.391058e-03 -1.456374e-02
## 3-130898     -2.970662e-03 -1.295711e-03
## 3-130996     -3.638283e-02  4.232006e-03
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## 3-131084     -1.490845e-03 -3.333278e-03
## 3-131107     -8.048706e-03 -7.084266e-02
## 3-131114     -1.077255e-02 -6.501871e-03
## 3-131201     -2.040234e-03 -2.819084e-02
## 3-131227      1.076443e-02 -2.764640e-03
## 3-131459     -3.639307e-03 -3.142080e-02
## 3-131575      6.268009e-02 -2.710477e-02
## 3-131584      6.964962e-03 -2.799500e-03
## 3-131668     -5.315986e-03 -3.384029e-02
## 3-131669     -2.785488e-02 -1.000334e-02
## 3-131685      9.534986e-03 -1.079777e-03
## 3-131695      2.853998e-02 -1.357633e-02
## 3-131698     -3.188866e-02 -2.857670e-02
## 3-131715     -3.580831e-02  1.997756e-02
## 3-131728      3.546360e-02  2.172198e-02
## 3-131765     -2.068375e-02 -5.144850e-03
## 3-131858      4.129309e-02 -1.446295e-02
## 3-132025      1.783868e-02  1.610669e-02
## 3-132069     -1.767702e-02  6.819045e-03
## 3-132097     -1.420826e-02 -1.423435e-02
## 3-132119      2.292206e-02 -8.186752e-05
## 3-132134     -2.828658e-02 -3.352423e-02
## 3-132134_2    1.575971e-02 -3.206014e-03
## 3-132155     -2.566542e-03 -7.020319e-03
## 3-132174      7.253433e-02 -4.436526e-04
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## 3-132325_2   -5.161341e-03 -3.608917e-02
## 3-132346     -4.935315e-02  9.965934e-03
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## 3-132354      4.129309e-02 -1.446295e-02
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## 3-132400     -3.113197e-02 -8.568357e-03
## 3-132458      1.195077e-01 -3.276784e-02
## 3-132463      1.370202e-02  2.939030e-02
## 3-132483     -1.302973e-02  1.129866e-02
## 3-132539      7.279903e-02  1.049560e-03
## 3-132581     -2.451451e-02  3.873876e-03
## 3-132589      2.173647e-02 -6.365927e-02
## 3-132589_2   -2.085651e-03 -2.655459e-03
## 3-132618      7.279903e-02  1.049560e-03

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## 3-132619 -7.076824e-05 -4.106429e-03
## 3-132657 1.562719e-02 3.364858e-02
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## 3-132837 1.856417e-02 6.540482e-03
## 3-132895 -1.485141e-03 -6.407789e-03
## 3-132922 7.279903e-02 1.049560e-03
## 3-132999 2.799344e-04 -4.796874e-03
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## 3-133012 -3.590810e-02 -1.565026e-02
## 3-133028 3.182840e-03 2.433223e-03
## 3-133090 -1.719842e-02 -8.127725e-03
## 3-133100 -7.213489e-03 -3.098329e-03
## 3-133102 4.596279e-03 3.672182e-03
## 3-133107 -2.774349e-02 -3.371553e-02
## 3-133147 1.436078e-02 3.025751e-02
## 3-133157 -2.804276e-02 2.275116e-02
## 3-133220 -1.045858e-02 1.288154e-02
## 3-133226 1.136297e-02 8.253379e-03
## 3-133264 -7.412249e-04 -3.600311e-03
## 3-133277 -1.445570e-02 -8.456014e-03
## 3-133287 -1.357762e-03 -1.134226e-02
## 3-133289 1.191372e-02 -5.739626e-04
## 3-133326 7.802486e-02 -1.106209e-04
## 3-133341 5.427675e-03 -7.112482e-03
## 3-133345 -1.036077e-02 2.055549e-02
## 3-133351 -3.262877e-02 -4.002099e-02
## 3-133354 -2.251107e-03 -2.889330e-02
## 3-133381 2.759326e-02 1.017708e-02
## 3-133385 -1.826001e-02 -6.473102e-03
## 3-133460 7.556906e-02 1.280350e-03
## 3-133483 1.182305e-02 -1.232065e-03
## 3-133502 -4.830371e-02 -6.075862e-02
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## 3-133873_2 -2.577556e-02 -1.367342e-02
## 3-133879 6.974763e-03 1.520883e-02
## 3-133895 -2.932022e-02 -4.383831e-04
## 3-133896 -4.085089e-03 -1.168732e-02
## 3-133915 2.180567e-02 3.954896e-02
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## 3-133938 4.814181e-02 -5.046270e-02
## 3-133976 7.993757e-03 -6.580382e-03
## 3-133995 -6.239172e-03 -1.040401e-01
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## 3-144204      -1.840763e-02  -9.171420e-03
## 3-144219      -7.977837e-04   1.129311e-02
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## 3-144324      8.177914e-03   -1.978782e-03
## 3-144397      -1.313510e-03  9.697922e-03
## 3-144427      8.956236e-03   9.111847e-03
## 3-144430      9.417240e-02   -7.207593e-02
## 3-144454      5.151781e-03   2.843518e-03
## 3-144579      -4.297748e-03  1.702082e-02
## 3-144583      1.456213e-02   8.895927e-03
## 3-144599      -9.508615e-03  -1.165434e-03
## 3-144607      -6.003008e-02   1.132927e-02
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## 3-144634      7.906486e-03   -1.032823e-03
## 3-144692      1.475202e-03   3.405576e-04
## 3-144695      8.956236e-03   9.111847e-03
## 3-144740      -1.226838e-03  9.522022e-03
## 3-144760      7.883316e-03   -7.449745e-04
## 3-144760_2    2.125668e-04   -4.319791e-03
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## 3-144851      -1.007534e-02  1.589640e-02
## 3-144863      -2.616149e-02  -2.428564e-02
## 3-144879      -1.628479e-02  3.131115e-02
## 3-144951      8.379004e-03   9.730492e-04
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## 3-144986      1.403217e-02   -1.615002e-03
## 3-144993      8.077853e-04   -1.935919e-02
## 3-145003      1.686938e-02   5.982408e-03
## 3-145026      8.502728e-03   -8.425016e-03
## 3-145039      3.934335e-02  -1.725563e-02
## 3-145066      -1.281062e-02  2.814354e-02
## 3-145117      -3.308889e-02  2.414445e-02
## 3-145118      8.879639e-02   -6.751546e-02
## 3-145150      -5.034742e-04  -4.743869e-04
## 3-145160      -1.276121e-02  -1.690348e-02
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## 3-145230      1.091353e-01   -2.571718e-02

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## 3-145354   8.580783e-02  -9.093280e-03
## 3-145541  -2.704025e-02  -1.941934e-03
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## 3-145581   8.295790e-03  -8.150540e-03
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## 3-145831  -2.201189e-02   1.706414e-02
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## 3-146233   3.913078e-02  -1.293584e-02
## 3-146264  -2.445612e-02  -8.665307e-03
## 3-146348  -4.227379e-02  -3.640581e-03
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## 3-146468  -1.466734e-02  -1.693194e-02
## 3-146535  -2.005520e-02   4.006110e-02
## 3-146541  -1.519376e-02  -2.129442e-02
## 3-146563   8.032210e-02  -5.340474e-04
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## 3-146804  -2.893732e-02   1.220461e-03
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## 3-146982  -1.332346e-02  -8.671356e-03
## 3-147028  -5.960295e-03   9.169092e-03
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## 3-147427     -7.597307e-03  -5.540037e-03
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## 3-147740      5.192996e-02  -4.697468e-02
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## 3-149771 -4.158853e-03 -4.768619e-02
## 3-149807 -7.569047e-03 -6.889277e-03
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## 4-155306 7.318067e-03 -5.303321e-02
## 4-155355 -7.541761e-03 2.028687e-02
## 4-155388 -5.185623e-02 -1.322279e-02
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## 4-156999 5.595186e-03 -5.861241e-03
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## 4-157475 -4.539164e-02 -3.405402e-02
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## 4-167884      6.024513e-03  2.422666e-02
## 4-167909      -4.997867e-02 -1.258035e-02
## 4-167910      1.751221e-02  8.305297e-03
## 4-167926      -3.037870e-03 -3.505686e-03
## 4-167957      1.635088e-03  -2.567830e-02
## 4-168008      2.283274e-03  -5.774027e-04
## 4-168086      8.039305e-03  1.359657e-02
## 4-168108      3.695631e-03  6.034883e-03
## 4-168125      7.908965e-02  -3.027055e-02
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## 4-168139      4.381535e-02  -2.013698e-02
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## 4-168318      -3.067680e-02  1.721870e-02
## 4-168373      1.995177e-02  5.344703e-02
## 4-168454      -3.359604e-02  2.859045e-02
## 4-168479      3.474070e-02  1.068529e-02
## 4-168480      -2.067005e-02  5.046477e-02
## 4-168508      -6.719574e-04  4.502652e-04
## 4-168614      -9.986106e-03 -7.094800e-03
## 4-168654      7.559986e-02  -6.324875e-02
## 4-168708      -1.532635e-05 -5.465659e-04
## 4-168888      -1.532635e-05 -5.465659e-04
## 4-168929      -1.764119e-02  4.123882e-02
## 4-168933      -1.081794e-03  4.062864e-03
## 4-169040      -1.769652e-04  -7.413587e-03
## 4-169048      -3.372481e-02  -6.869218e-05

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## 4-169249     -1.107267e-02 -9.044967e-03
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## 4-169285     -1.388004e-02 -1.825838e-02
## 4-169294      6.021488e-03  2.700191e-02
## 4-169319      6.413328e-03  2.206520e-02
## 4-169328     -3.833595e-03  1.462481e-02
## 4-169481      1.851086e-03  -1.510368e-02
## 4-169514      1.456439e-02  -2.025444e-02
## 4-169547     -6.736833e-03  -1.376744e-02
## 4-169602      1.614152e-02  4.716044e-03
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## 4-169669      1.135178e-02  -1.795946e-02
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## 4-169939      7.593083e-03  1.917353e-02
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## 4-170228      4.597466e-02  7.333299e-03
## 4-170232     -1.530081e-02  1.307164e-02
## 4-170328     -2.663880e-02  4.421206e-03
## 4-170335      2.593193e-04  -4.008392e-03
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## 4-170411     -1.925552e-02  -6.790574e-03
## 4-170553     -6.337757e-03  -3.093053e-02
## 4-170556      3.751558e-02  -4.192654e-02
## 4-170591      2.108052e-02  1.986633e-03
## 4-170608     -2.911610e-02  -4.602251e-03
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## 4-170724      1.171375e-03  -5.573136e-03
## 4-170867     -4.845746e-03  -3.657995e-02
## 4-170944      1.028548e-02  1.261570e-02
## 4-170985      8.578467e-03  1.225318e-02
## 4-170987      1.777562e-02  7.408895e-05
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## 4-171084     -1.063578e-02  -8.790869e-03
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## 4-171099      2.522083e-03  2.002153e-03
## 4-171115      6.435641e-03  -6.566865e-03
## 4-171168     -5.735679e-02  3.070236e-02
## 4-171202      8.578467e-03  1.225318e-02
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## 4-171228     -3.037280e-02  8.606053e-02
## 4-171236      1.434549e-02  2.968724e-03
## 4-171274      6.098461e-03  -5.973632e-03
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## 4-171295      1.028548e-02  1.261570e-02

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## 4-171584 -3.009236e-02 -1.250880e-02
## 4-171597 -4.047890e-02 -3.483531e-03
## 4-171664 -3.145380e-02 -1.416018e-02
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## 4-171708  3.544473e-02  8.241535e-03
## 4-171742  1.010504e-02  5.666315e-03
## 4-171751  4.303682e-02 -3.336393e-02
## 4-171763  1.992022e-03  3.768228e-03
## 4-171767  1.373534e-02  3.689060e-03
## 4-171845  9.431944e-04 -5.172424e-03
## 4-171847  1.829374e-05  8.472506e-03
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## 4-171909  1.244392e-02  3.712398e-02
## 4-171921  2.559604e-02  1.431838e-02
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## 4-171977 -8.537159e-03  1.360260e-03
## 4-172017  1.873897e-03 -1.715463e-02
## 4-172025  1.559088e-03 -4.895537e-03
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## 4-172479  1.842568e-02  2.781214e-03
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## 4-172964 -4.775799e-03 -6.610041e-03
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## 4-173136 -1.875035e-02 -1.411768e-02
## 4-173211 -1.475600e-02  1.241226e-02
## 4-173215  4.117402e-04 -1.423368e-02
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## 4-173617 5.504441e-03 -5.945227e-03
## 4-173671 -3.212968e-02 3.943828e-02
## 4-173671_2 -6.756087e-03 1.233538e-02
## 4-173703 -2.208656e-03 -5.459987e-03
## 4-173727 -2.063607e-02 -1.576876e-02
## 4-173885 -1.122909e-01 -1.477620e-01
## 4-173932 3.569461e-03 -8.183926e-03
## 4-173975 -1.730989e-02 3.469495e-03
## 4-173978 -9.714877e-03 -5.186473e-03
## 4-173991 -4.219948e-02 -6.995225e-02
## 4-174102 1.317234e-02 3.323843e-02
## 4-174144 -4.079776e-03 -7.074545e-03
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## 4-174154 -5.305679e-03 -6.147348e-03
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## 4-174200 1.806770e-02 -6.846074e-03
## 4-174213 -2.377508e-02 -2.050324e-02
## 4-174242 -3.502377e-02 -3.243180e-03
## 4-174308 -2.100021e-02 1.710973e-02
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## 4-174353 3.027396e-03 -8.381525e-03
## 4-174406 -1.822669e-04 2.486265e-02
## 4-174428 7.992510e-04 -5.044439e-03
## 4-174434 -1.822669e-04 2.486265e-02
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## 4-175035 9.921164e-03 5.164034e-03
## 4-175063 2.689390e-03 -2.595770e-03
## 4-175073 -2.681228e-05 6.942359e-03
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## 4-175234 1.160739e-02 3.531838e-02
## 4-175314 1.933912e-03 -3.516864e-03
## 4-175440 -1.844430e-02 5.135790e-02
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## 4-176127      3.393673e-02 -3.414755e-03
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## 4-176467     -4.900587e-03 -1.775311e-02
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## 4-176585      1.070509e-01 -7.505568e-02
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## 4-177268     -5.781753e-03 -2.944619e-03
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## 4-177640      -5.064207e-02  -9.114777e-03
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## 4-177826      -1.741883e-02  3.963009e-02
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## 4-179416      1.013494e-02  4.397857e-03
## 4-179451     -2.027438e-02  7.789078e-02
## 4-179461     -6.615204e-03 -6.920704e-03
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## 4-179527     -1.969246e-03  6.462081e-04
## 4-179547     -5.107526e-02 -1.889642e-02
## 4-179550     -1.720892e-02  6.148679e-02
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## 4-179792     -1.720892e-02  6.148679e-02
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## 4-179981     -5.730089e-02 -1.092684e-02
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## 4-180536      8.578467e-03  1.225318e-02
## 4-180545     -3.999916e-03  6.427498e-03
## 4-180561      4.511482e-03  1.600554e-03
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## 4-180738      1.122247e-02  2.566328e-02
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## 4-180760      6.049737e-04 -1.649207e-03
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## 4-181049 -1.164588e-02 2.543633e-02
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## 4-181074 1.205566e-02 -3.956835e-02
## 4-181126 -2.022538e-02 -1.497362e-02
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## 4-181264 -8.151917e-03 2.160775e-02
## 4-181264_2 -2.730858e-03 5.615069e-03
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## 4-182735 1.297479e-02 -2.782594e-03
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## 4-183077 1.885099e-02 1.103298e-02
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## 4-183236 7.409587e-03 1.988890e-02
## 4-183238 -1.627986e-02 4.694771e-03
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## 4-183325 1.151227e-02 -5.498864e-03
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## 4-186829     -1.276678e-03 -1.540577e-02
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## 4-187365      7.033085e-03  2.268014e-02
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## 4-188268     -6.630773e-02  4.327722e-02
## 4-188354     -2.177711e-02 -2.088089e-03
## 4-188484     -5.225104e-02 -4.092730e-02
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## 4-188606     -3.879491e-03 -3.477298e-03
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## 4-188619     -2.668983e-02 -7.960834e-03
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## 4-192365 -2.204051e-03 -9.903090e-03
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## 4-192486 -1.599953e-02 -6.105349e-03
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## 5-204024 -1.010461e-02 -3.271307e-03
## 5-204047 5.647139e-03 -2.977418e-02
## 5-204096 -1.584299e-02 4.062653e-02
## 5-204270 -2.273508e-03 -8.233470e-03
## 5-204327 1.937077e-02 -1.840545e-02
## 5-204459 -1.894419e-02 1.369451e-02
## 5-204516 2.143767e-02 7.630729e-03
## 5-204539 1.312112e-03 -1.941302e-02
## 5-204606 1.491335e-04 -4.161415e-03
## 5-204612 3.291668e-03 -3.342791e-03
## 5-204626 -1.912582e-02 1.295844e-02
## 5-204629 -6.615739e-02 1.366042e-01
## 5-204692 1.306591e-03 -3.234190e-02
## 5-204695 3.344581e-02 -3.264461e-02
## 5-204734 2.143767e-02 7.630729e-03
## 5-204912 -2.837361e-03 -1.108451e-02
## 5-204933 3.652657e-03 1.044744e-02
## 5-204960 7.046627e-03 1.804198e-02
## 5-205007 8.940873e-05 9.421337e-03
## 5-205061 9.278870e-04 -2.540459e-02
## 5-205080 -1.233514e-02 8.108724e-03
## 5-205114 1.112913e-03 -5.313975e-03
## 5-205125 4.076498e-02 -2.793448e-03
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## 5-205314      3.621397e-03  -5.898663e-03
## 5-205421     -3.403125e-02  1.582648e-02
## 5-205459     -3.112087e-02  -1.526695e-03
## 5-205470      1.571930e-02  4.375008e-03
## 5-205474     -6.316788e-02  -1.213307e-02
## 5-205474_2   -2.590227e-03  -2.511613e-02
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## 5-205559     -4.532044e-03  2.143398e-03
## 5-205593     -2.603322e-02  -3.599582e-02
## 5-205598     -1.875441e-02  7.934650e-03
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## 5-205632      3.910831e-02  8.501767e-03
## 5-205700      8.220763e-03  1.415908e-02
## 5-205785     -5.458631e-03  -3.415888e-02
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## 5-206254     -1.141129e-02  1.300278e-02
## 5-206272      1.065534e-02  -7.409873e-04
## 5-206328      3.192681e-02  -1.569497e-03
## 5-206381     -1.249689e-04  -1.102524e-02
## 5-206402     -5.264269e-02  2.263974e-03
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## 5-206863      2.633282e-03  -1.501090e-03
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## 5-207028      9.215551e-03  1.949560e-03
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## 5-207124     -7.506783e-03  1.115542e-02
## 5-207146     -1.140275e-02  -8.773698e-04
## 5-207222      4.241353e-03  -5.803777e-03
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## 5-207319      1.267721e-02  2.962110e-02

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## 5-207455    -3.780353e-02 -4.284185e-02
## 5-207567    -2.514664e-02  2.110104e-02
## 5-207660     2.872668e-03  1.887198e-02
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## 5-207716     4.578780e-03 -3.744900e-02
## 5-207748     1.815755e-02  3.622944e-03
## 5-207776     1.330699e-02  2.703322e-02
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## 5-207814     2.553770e-03  1.422635e-02
## 5-207868    -3.186288e-02 -3.671586e-02
## 5-207934     1.015227e-04  1.183271e-03
## 5-207946    -3.771667e-05  7.292223e-03
## 5-207988    -2.753633e-03 -6.248779e-04
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## 5-208332     2.774684e-04 -4.004229e-03
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## 5-208426    -4.315819e-04  3.197173e-03
## 5-208479     1.931248e-03 -4.479005e-03
## 5-208589     1.102356e-01 -3.196956e-02
## 5-208594    -1.701448e-03  5.689850e-04
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## 5-209336     2.945029e-02  4.848696e-03
## 5-209380    -1.386506e-02 -9.928863e-03
## 5-209424     2.502336e-02  1.106051e-02
## 5-209538     7.064736e-03  5.388969e-05
## 5-209572    -1.629353e-02 -6.731900e-02
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## 5-209776     1.451535e-02  6.214929e-03
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## 5-209960     1.931248e-03 -4.479005e-03
## 5-209962    -1.679712e-02  5.424415e-02
## 5-209976     5.357826e-03 -8.329990e-03
## 5-209991    -1.275673e-02 -8.323429e-03
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## 5-210077     -1.603675e-02  -2.631302e-04
## 5-210138     -2.373081e-04  -1.990693e-02
## 5-210163     -4.345618e-02  -6.763510e-03
## 5-210178      2.248256e-02   5.786648e-02
## 5-210222     -2.257279e-02  -6.009545e-05
## 5-210277      1.809164e-03  -2.410288e-02
## 5-210297     -1.181056e-02   1.539246e-02
## 5-210312      1.427519e-02   7.175082e-03
## 5-210362     -2.684637e-03  -1.454394e-03
## 5-210371      8.181880e-03  -2.023404e-03
## 5-210395     -4.029350e-03  -8.225101e-03
## 5-210463     -2.258691e-02  -1.613379e-02
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## 5-210566     -1.603675e-02  -2.631302e-04
## 5-210577      4.396076e-04  2.906730e-03
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## 5-210785      1.531347e-02   9.759291e-03
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## 5-211496     -4.075228e-02   7.765197e-03
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## 5-211662      8.047401e-02  -2.300673e-02
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## 5-211739      7.112446e-02  -4.068174e-02
## 5-211786     -3.164906e-02   2.664513e-03
## 5-211980      4.902688e-02   3.669950e-02
## 5-211988     -3.111247e-03  -1.044676e-02
## 5-212141     -2.504607e-03  -1.042265e-02
## 5-212160      5.505336e-03   1.292465e-02
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## 5-212461 5.583801e-02 3.717993e-02
## 5-212473 -2.662337e-02 -2.593477e-02
## 5-212537 -7.190355e-03 -1.544991e-02
## 5-212571 -2.546364e-02 3.901142e-02
## 5-212616 -6.286043e-02 -1.010739e-02
## 5-212653 -1.827264e-02 -1.227612e-03
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## 5-212702 2.177802e-02 1.670847e-03
## 5-212745 5.211164e-03 1.749828e-02
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## 5-212788 9.070508e-03 -5.216861e-03
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## 5-213351 -7.190355e-03 -1.544991e-02
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## 5-214028 -2.021700e-02 1.207696e-02
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## 5-214110 -5.622625e-03 -1.168252e-01
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## 5-214241 5.317750e-03 1.658320e-02
## 5-214279 1.546290e-02 6.802597e-03
## 5-214367 -8.347640e-02 -1.269831e-01
## 5-214375 2.626428e-03 3.199847e-03
## 5-214378 1.171007e-03 -4.495012e-03
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## 5-214631 1.445960e-03 -1.766662e-03
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## 5-215963 -2.138265e-02 -1.588702e-02
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## 5-216600      6.495087e-03 -7.174131e-02
## 5-216642      7.859939e-03  2.178499e-02
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## 5-216718      -2.377151e-02  3.701746e-02
## 5-216859      3.116744e-02  7.259901e-02
## 5-216904      1.593728e-02  3.364987e-03
## 5-216992      3.651402e-03 -3.663842e-02
## 5-217063      3.189514e-02 -8.084893e-03
## 5-217089      -4.791127e-02 -5.695213e-02
## 5-217115      3.398114e-03 -3.630678e-02
## 5-217116      2.974467e-02  6.954454e-02
## 5-217189      1.231476e-02  3.928148e-03
## 5-217199      -1.812920e-02  2.081654e-02
## 5-217266      -5.583929e-05 -6.976428e-03
## 5-217294      2.974467e-02  6.954454e-02
## 5-217300      1.051256e-02  2.442761e-02
## 5-217320      7.475876e-02 -5.975939e-02
## 5-217322      -2.829544e-02 -3.080305e-03
## 5-217354      1.839792e-02  4.934247e-03
## 5-217394      -4.619150e-05 -1.262733e-02
## 5-217422      -2.184710e-02  4.670372e-02
## 5-217465      -8.248244e-03 -1.022013e-02
## 5-217477      3.752648e-03  4.486555e-03
## 5-217494      3.752648e-03  4.486555e-03
## 5-217550      2.292212e-02  6.417094e-03
## 5-217579      -8.771430e-02 -9.282545e-02
## 5-217660      -8.443073e-02 -1.501751e-01
## 5-217698      -2.475360e-02 -1.512449e-03
## 5-217734      -8.296643e-03 -4.676618e-03

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## 5-217755      3.661418e-03  1.769405e-03
## 5-217757      1.592316e-02  6.308035e-03
## 5-217795     -1.153416e-02  -2.359401e-03
## 5-217828     -2.176455e-02  6.117458e-03
## 5-217837     -2.114291e-02  4.589452e-02
## 5-217863     -3.788265e-03  -2.485118e-02
## 5-218008      4.591980e-04  -1.300104e-02
## 5-218018     -2.627630e-02  -8.453061e-03
## 5-218020      7.067707e-03  1.962307e-02
## 5-218033     -1.112649e-03  -2.360264e-02
## 5-218035      8.059206e-02  -3.268965e-04
## 5-218217      8.304242e-02  -4.333426e-04
## 5-218279     -1.174163e-02  4.551081e-02
## 5-218312     -1.174163e-02  4.551081e-02
## 5-218318     -2.037744e-04  -6.720315e-03
## 5-218379     -4.975124e-04  -7.179272e-03
## 5-218399      3.588921e-03  1.160008e-02
## 5-218452      6.297411e-03  4.783538e-03
## 5-218531     -6.678915e-03  -4.650040e-04
## 5-218549     -5.219793e-04  -7.381908e-03
## 5-218579     -3.300406e-02  1.843485e-02
## 5-218591     -3.671111e-03  -8.131768e-04
## 5-218690     -3.990546e-02  -4.096065e-02
## 5-218692      8.304242e-02  -4.333426e-04
## 5-218700      6.257785e-02  -4.538024e-02
## 5-218725     -3.614385e-03  -1.748809e-02
## 5-218726     -1.473334e-02  -8.446074e-03
## 5-218745      4.386764e-02  1.522781e-02
## 5-218816      2.272086e-03  -4.378570e-03
## 5-218828      3.484522e-02  -5.778790e-02
## 5-218880     -1.644721e-02  -5.489602e-04
## 5-218898      1.729045e-02  3.251221e-04
## 5-218923     -2.226856e-02  2.573297e-05
## 5-218946      2.272086e-03  -4.378570e-03
## 5-218966      1.026001e-02  -9.439596e-03
## 5-218976     -3.695018e-03  -1.681530e-02
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## 5-219077     -1.671444e-03  -6.554166e-03
## 5-219113     -1.994425e-02  8.770361e-03
## 5-219186      4.199559e-02  5.263152e-03
## 5-219199     -5.642643e-04  -8.785828e-03
## 5-219204     -7.110466e-03  -1.433228e-02
## 5-219214     -2.408846e-02  1.581219e-02
## 5-219225     -5.040988e-02  2.292424e-02
## 5-219325     -2.902645e-02  1.743885e-02
## 5-219376      3.274839e-02  -1.249572e-01
## 5-219548     -2.408846e-02  1.581219e-02
## 5-219623      8.059206e-02  -3.268965e-04
## 5-219673     -3.921420e-04  -5.971342e-03
## 5-219691      4.641444e-03  -8.152811e-03
## 5-219701     -1.155492e-02  -3.622931e-02
## 5-219745     -1.155492e-02  -3.622931e-02
## 5-219782      3.909606e-02  -2.726027e-02
## 5-219796     -1.729046e-02  -1.989684e-03

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## 5-219858     -4.994605e-04  -5.770272e-03
## 5-219871     -9.750658e-03  -1.090266e-02
## 5-219970     -1.521213e-01  -1.369555e-01
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## 5-220062      2.550928e-03  1.294957e-03
## 5-220189      1.187662e-02  6.357325e-04
## 5-220192     -7.368059e-04  -9.584115e-03
## 5-220210     -1.155492e-02  -3.622931e-02
## 5-220221      1.187662e-02  6.357325e-04
## 5-220237      1.739845e-02  6.777881e-03
## 5-220242      7.881208e-03  7.113245e-04
## 5-220271     -4.605099e-03  1.316124e-02
## 5-220338      8.831488e-03  5.711290e-03
## 5-220350      3.465047e-02  -2.435764e-02
## 5-220414      6.747681e-03  1.574476e-02
## 5-220446      1.120125e-03  -1.653653e-03
## 5-220505      1.120125e-03  -1.653653e-03
## 5-220536      8.178887e-03  -2.143971e-03
## 5-220574      1.492417e-02  3.605245e-03
## 5-220627      2.906455e-02  -4.614372e-02
## 5-220650     -1.709917e-04  -6.879456e-03
## 5-220706      6.016121e-02  2.248428e-03
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## 5-220743     -4.404672e-03  -4.441410e-02
## 5-220787      3.895490e-02  -1.292280e-02
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## 5-220932      1.262999e-02  6.140367e-03
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## 5-221026      1.758467e-02  3.284273e-02
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## 5-221195      2.487854e-02  7.101713e-03
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## 5-221557      3.895490e-02  -1.292280e-02
## 5-221585      1.396237e-02  8.663103e-04
## 5-221589     -2.926762e-02  -2.152579e-02
## 5-221677     -1.486244e-02  4.711235e-03
## 5-221719     -3.225266e-03  -4.084231e-03
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## 5-221766      8.944174e-03  2.329101e-03
## 5-221837     -2.367445e-03  -1.885972e-02
## 5-221938     -1.962980e-02  6.172778e-03
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## 5-222008     -1.898833e-02  6.885792e-03

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## 5-222063      3.496535e-02  1.195230e-02
## 5-222073      1.006123e-02 -1.225659e-02
## 5-222095      1.816995e-03 -1.598744e-02
## 5-222130      -1.015526e-02 -6.891684e-03
## 5-222156      -4.345434e-03  8.907302e-03
## 5-222193      1.667597e-02  4.346063e-03
## 5-222375      -2.500817e-02  2.436709e-02
## 5-222390      -1.105227e-02  5.722433e-02
## 5-222414      1.447315e-02 -2.325364e-04
## 5-222437      -1.829618e-03 -4.530518e-04
## 5-222481      -2.131569e-02 -2.454980e-03
## 5-222571      3.799772e-03  1.443341e-02
## 5-222780      -1.489081e-03 -2.045429e-02
## 5-222825      8.304242e-02 -4.333426e-04
## 5-222837      4.023282e-02 -4.897103e-02
## 5-222948      4.553288e-02 -8.969817e-03
## 5-223026      5.437872e-02  2.639592e-02
## 5-223030      8.068491e-03  2.313298e-02
## 5-223042      -2.805859e-02 -4.942206e-03
## 5-223055      3.814088e-02  1.222255e-02
## 5-223097      -2.164222e-02  3.242220e-02
## 5-223099      1.118081e-02  3.603703e-03
## 5-223119      1.465495e-02 -6.984522e-04
## 5-223120      -1.104525e-02  5.023092e-03
## 5-223184      -1.712517e-02 -5.789654e-03
## 5-223191      1.010993e-02  3.904003e-03
## 5-223254      -3.290083e-02 -2.851049e-02
## 5-223273      4.359743e-02 -1.460613e-02
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## 5-223319      1.064459e-02  2.177356e-02
## 5-223368      -7.701088e-04 -5.855014e-04
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## 5-223569      -5.162138e-03  6.349212e-03
## 5-223637      8.637116e-03  1.692362e-03
## 5-223704      4.650033e-02 -1.065195e-02
## 5-223723      -1.734907e-02  2.014470e-02
## 5-223890      -3.095291e-02 -1.075945e-02
## 5-223914      4.135480e-02 -4.775517e-02
## 5-223983      2.002005e-04  8.496768e-02
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## 5-224124      8.652074e-02  5.231137e-02
## 5-224133      -9.814954e-03 -3.435136e-02
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## 5-224221      1.024069e-02  2.376070e-03

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## 5-224374 -2.751370e-03 -6.664938e-03
## 5-224464 -2.164222e-02 3.242220e-02
## 5-224518 -1.635791e-01 -9.786984e-02
## 5-224586 -1.285345e-02 2.859297e-02
## 5-224595 6.382097e-02 6.591981e-02
## 5-224632 2.569024e-03 -1.632290e-02
## 5-224648 1.047881e-02 4.154133e-03
## 5-224731 -1.514163e-02 2.778832e-02
## 5-224732 9.375884e-03 2.076869e-02
## 5-224742 8.300319e-03 -4.957255e-04
## 5-224757 8.667887e-03 1.947330e-03
## 5-224759 -8.420651e-03 -7.639479e-03
## 5-224785 4.480712e-02 -1.815533e-02
## 5-224809 -4.917997e-02 4.175853e-02
## 5-224816 -3.254815e-03 4.928602e-02
## 5-224819 7.673837e-04 -6.509287e-04
## 5-224834 -4.672482e-03 -3.525509e-02
## 5-224835 -3.348288e-02 2.807163e-02
## 5-224846 -2.020032e-02 -4.610578e-03
## 5-224868 2.688164e-02 3.108168e-02
## 5-224926 1.183997e-02 -6.823492e-03
## 5-224928 -4.390907e-02 -1.087571e-02
## 5-224949 -2.226970e-03 -2.181022e-02
## 5-224957 5.238982e-02 1.884355e-02
## 5-225004 6.374031e-04 -9.426117e-03
## 5-225006 6.662586e-04 -1.523465e-02
## 5-225007 -4.941103e-02 3.193238e-02
## 5-225019 -1.251003e-01 -1.213042e-01
## 5-225059 4.135480e-02 -4.775517e-02
## 5-225142 -1.540817e-02 -1.462834e-02
## 5-225184 -3.032559e-02 -3.700708e-02
## 5-225207 1.243972e-01 -4.818851e-02
## 5-225242 7.151025e-03 -9.814414e-03
## 5-225286 4.978169e-02 1.787276e-02
## 5-225297 -3.032373e-03 -2.997558e-02
## 5-225305 -2.221609e-03 -1.741701e-02
## 5-225344 -2.847756e-03 -2.050427e-02
## 5-225344_2 -3.148535e-02 -1.953136e-02
## 5-225359 5.430305e-02 1.058914e-01
## 5-225521 -1.627404e-02 3.518742e-02
## 5-225573 3.803830e-03 1.697031e-02
## 5-225611 1.464908e-03 -2.483094e-03
## 5-225618 1.232542e-02 2.758854e-03
## 5-225625 1.274673e-02 9.318772e-03
## 5-225696 -3.149753e-03 -1.563464e-03
## 5-225832 1.042590e-02 -7.667435e-03
## 5-225842 -4.147829e-03 1.065590e-02
## 5-225851 -1.850602e-03 -1.542566e-02
## 5-225856 -3.149753e-03 -1.563464e-03
## 5-225895 3.429556e-02 -3.534939e-03
## 5-225908 -2.295179e-02 5.113874e-02
## 5-225954 -3.608190e-02 3.133015e-02
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## 5-226036 2.787680e-03 1.968157e-02

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## 5-226041      3.970686e-03 -7.051199e-03
## 5-226111     -8.482153e-03 -2.257782e-03
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## 5-226130      3.265782e-03 -9.792056e-03
## 5-226153     -1.243904e-02  1.046922e-03
## 5-226154     -2.748478e-02 -2.620789e-02
## 5-226192     -3.129243e-02  2.566494e-02
## 5-226243     -5.162688e-02 -8.133224e-03
## 5-226286      3.854594e-02 -3.281068e-02
## 5-226319     -9.174036e-03 -2.746150e-02
## 5-226358     -3.709825e-03 -3.253938e-03
## 5-226365      1.033829e-02  1.864869e-03
## 5-226373     -1.533369e-02  1.502997e-02
## 5-226384      8.304242e-02 -4.333426e-04
## 5-226397      9.002924e-03  4.067014e-02
## 5-226484     -8.940954e-03 -2.597978e-03
## 5-226498     -1.335428e-03 -1.698012e-02
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## 5-226510      1.636772e-02  3.210543e-02
## 5-226589      1.968424e-02 -4.204812e-03
## 5-226715      7.984180e-03 -2.227698e-03
## 5-226726     -8.757392e-03 -6.164200e-03
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## 5-226920      4.774189e-02 -3.968022e-02
## 5-226949     -8.757392e-03 -6.164200e-03
## 5-226959     -2.517057e-02  2.194988e-02
## 5-227044     -1.655502e-02 -1.294137e-03
## 5-227082     -2.020255e-02 -5.328743e-03
## 5-227228     -2.017265e-03 -1.537344e-02
## 5-227293     -3.287934e-02 -3.769663e-03
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## 5-227307     -1.786111e-02  1.368497e-02
## 5-227347      1.481237e-02  4.765205e-03
## 5-227391     -1.493629e-03 -3.992338e-02
## 5-227440     -7.876574e-03 -1.669893e-02
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## 5-227579     -1.273831e-02 -3.972340e-03
## 5-227676      2.475269e-02 -8.419186e-03
## 5-227790     -6.417573e-02 -6.144848e-02
## 5-227793     -1.478447e-03  1.767655e-02
## 5-227802     -1.937724e-02  1.520312e-02
## 5-227854      1.344625e-03  1.040462e-03
## 5-227947      2.864256e-03 -1.703291e-02
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## 5-228037     -1.937724e-02  1.520312e-02

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## 5-228131      4.376510e-02 -5.649383e-03
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## 5-228257      4.460989e-02  1.296413e-02
## 5-228282      -4.061456e-04  6.913092e-03
## 5-228317      -4.920312e-03 -2.044504e-02
## 5-228348      1.319763e-02  6.360678e-04
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## 5-228561      -4.152587e-02 -5.329290e-02
## 5-228669      -4.951171e-02 -1.060754e-02
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## 5-228775      4.724767e-02  5.066939e-02
## 5-228777      2.291221e-02  3.373374e-03
## 5-228783      3.450989e-03  9.399569e-03
## 5-228786      -6.171921e-03 -1.901161e-02
## 5-228786_2    -1.472800e-02 -8.187116e-03
## 5-228811      1.574468e-02 -1.124578e-02
## 5-228896      -1.148286e-02 -4.261282e-03
## 5-228952      1.838876e-02  3.961562e-02
## 5-228988      5.189053e-03  1.690576e-02
## 5-228997      3.450989e-03  9.399569e-03
## 5-228999      1.956730e-02  4.325132e-02
## 5-229045      -1.893782e-02  2.609088e-02
## 5-229061      -3.140571e-03  7.406057e-03
## 5-229101      -6.171921e-03 -1.901161e-02
## 5-229117      -1.950854e-02  1.353061e-02
## 5-229153      2.959434e-03  1.094902e-02
## 5-229178      -8.851386e-03  6.592228e-03
## 5-229233      -1.508729e-03  7.017234e-03
## 5-229279      2.362091e-02  2.796523e-03
## 5-229334      -1.591242e-02 -4.734875e-02
## 5-229402      1.586267e-03  1.051062e-02
## 5-229443      6.284529e-03  1.287524e-02
## 5-229475      -3.826390e-04 -6.856493e-03
## 5-229485      -2.595178e-05  1.125772e-02
## 5-229490      3.435580e-03 -4.139571e-03
## 5-229533      -2.098066e-02  1.143965e-02
## 5-229545      -1.561295e-02  3.789266e-02
## 5-229567      1.976458e-02  8.407546e-03
## 5-229613      4.039048e-03 -1.210522e-03
## 5-229649      1.070021e-03  9.018761e-03
## 5-229679      6.689064e-03 -2.289254e-03
## 5-229686      -2.449809e-03  3.536963e-03
## 5-229701      2.430275e-02  4.405892e-03
## 5-229733      2.022426e-03 -3.917747e-03
## 5-229835      -6.190844e-03 -1.903993e-02
## 5-229868      -5.037510e-02 -3.683309e-03
## 5-229941      -1.948023e-02  1.269819e-02
## 5-229942      -4.171208e-02  5.159746e-02
## 5-229981_2    2.831486e-03 -1.988834e-02
## 5-230013      3.148607e-03 -9.198111e-03
## 5-230022      7.222068e-03  2.402588e-03
## 5-230089      -5.231056e-02 -6.429808e-02

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## 5-230193    1.320432e-02  2.109223e-03
## 5-230218    1.707339e-03  5.424777e-07
## 5-230254   -6.190844e-03 -1.903993e-02
## 5-230276    1.411351e-02  5.766517e-03
## 5-230285   -4.791375e-02 -5.875597e-02
## 5-230355    1.265969e-03  2.683524e-03
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## 5-230565    3.414396e-03  2.589186e-02
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## 5-230608   -2.559155e-03 -1.108207e-02
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## 5-230720    4.191513e-03  6.754026e-03
## 5-230740   -1.225593e-02 -4.129860e-02
## 5-230749   -4.684021e-02 -5.585080e-02
## 5-230753   -3.617984e-02 -5.417978e-03
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## 5-231124    4.227392e-03 -6.506568e-03
## 5-231156   -3.401974e-02 -4.404175e-02
## 5-231180    4.341123e-02 -4.394174e-02
## 5-231310    1.441595e-03 -1.894084e-03
## 5-231328    9.390781e-03  1.760551e-02
## 5-231345   -1.507469e-02 -9.755558e-03
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## 5-231491    1.468272e-02  4.722218e-03
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## 5-231536   -7.090181e-02 -7.463294e-02
## 5-231618    1.468272e-02  4.722218e-03
## 5-231625    1.679125e-02 -2.370932e-03
## 5-231648    5.077899e-03  2.090738e-02
## 5-231715   -4.150972e-03 -6.172884e-03
## 5-231765    5.957804e-04 -8.904095e-03
## 5-231776    1.260823e-03 -2.692023e-03
## 5-231816    1.243590e-02 -1.036448e-03
## 5-231904   -1.858489e-02 -1.154899e-02
## 5-231915    1.691785e-02 -2.968772e-03
## 5-231928   -1.348309e-02  2.336389e-02
## 5-231941   -3.986210e-02 -5.054172e-03
## 5-231956    1.239916e-02  1.496489e-02
## 5-232059    9.455354e-02 -5.983791e-03
## 5-232063    1.788178e-03  1.425394e-02
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## 5-232083   -4.150972e-03 -6.172884e-03

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## 5-232200     -1.518140e-02 -4.796920e-03
## 5-232286      2.845430e-02 -1.032043e-02
## 5-232372     -2.369550e-03 -1.097817e-02
## 5-232480     -9.065915e-03 -9.298762e-02
## 5-232492     -1.208914e-02 -5.168813e-02
## 5-232600     -7.844927e-03 -2.513630e-03
## 5-232601     -1.129776e-02 -4.825973e-02
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## 5-232624     -2.215597e-03 -1.589067e-02
## 5-232754     -8.490626e-02 -1.911385e-01
## 5-232756     -1.652741e-02  1.585375e-02
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## 5-232820      1.268294e-02  1.252496e-02
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## 5-232875     -6.025802e-04 -8.494844e-03
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## 5-233088     -1.710771e-02 -1.617017e-02
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## 5-233096_2    7.577977e-02  3.644534e-04
## 5-233127     -3.669368e-02 -2.709202e-03
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## 5-233464      1.424866e-02 -5.597177e-04
## 5-233580      1.043512e-02  2.768221e-02
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## 5-234323 7.823327e-03 4.505324e-03
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## 5-234360 -2.520672e-03 7.841846e-03
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## 5-234488 -1.211148e-02 1.739538e-02
## 5-234704 1.984717e-02 6.661157e-03
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## 5-235074 -5.418814e-02 -4.005573e-03
## 5-235188 -1.856958e-03 5.207610e-03
## 5-235196 -2.014839e-02 -1.715194e-02
## 5-235293 1.546466e-02 2.735856e-02
## 5-235303 1.874260e-02 -1.004229e-02
## 5-235371 2.609386e-03 9.732981e-03
## 5-235381 7.436478e-03 2.232642e-02
## 5-235417 -4.006097e-03 1.660418e-02
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## 5-235714 1.395373e-02 3.268839e-03
## 5-235721 1.231425e-02 1.701979e-02
## 5-235735 -1.318436e-02 5.362380e-02
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## 5-236324 -1.940410e-03 3.317518e-03
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## 5-236688 8.909468e-03 -6.185294e-03
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## 5-236696 2.318962e-02 7.356750e-03
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## 5-237117     -1.149817e-02   2.194517e-02
## 5-237158     -1.095533e-03  -1.637109e-02
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## 5-237238     -2.348335e-02  -1.012217e-02
## 5-237262      2.342604e-02   4.450890e-02
## 5-237264      2.668173e-02  -8.081796e-03
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## 5-237802      3.789599e-02  -1.301185e-02
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## 5-237981      4.669780e-02  -1.974996e-02
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## 5-238176     -2.210981e-02   4.529747e-04
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## 5-239470 -4.458405e-03 9.725279e-03
## 5-239471 -4.083779e-04 -2.846157e-03
## 5-239477 -3.252683e-03 -1.124153e-02
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## 5-240439 -2.222670e-03 7.754679e-03
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## 5-241009 -1.786747e-02 -7.300298e-02

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## 5-241716 -6.234521e-03 3.093418e-03
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## 5-242064 -2.189880e-02 7.100583e-03
## 5-242150 1.263167e-02 -3.505737e-04
## 5-242183 2.428607e-03 -1.191950e-02
## 5-242240 -4.828435e-02 -1.279841e-02
## 5-242299 2.069183e-02 4.300401e-02
## 5-242300 1.120349e-02 5.729935e-03
## 5-242302 -3.382044e-03 -1.111085e-02
## 5-242327 4.363801e-02 4.942912e-03
## 5-242337 1.476927e-02 8.466408e-03
## 5-242337_2 1.286454e-02 4.928659e-03
## 5-242374 7.577977e-02 3.644534e-04
## 5-242379 1.430588e-02 6.178271e-03
## 5-242442 1.476927e-02 8.466408e-03
## 5-242479 1.960319e-02 4.210931e-02
## 5-242487 -1.501602e-02 -1.683702e-02
## 5-242513 1.481874e-02 3.003060e-03
## 5-242515 1.481874e-02 3.003060e-03
## 5-242531 1.233694e-03 -5.528620e-03
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## 5-242904      -7.793056e-03  1.866725e-02
## 5-242926      -1.275470e-02  -6.151801e-02
## 5-242948      3.543241e-02   -2.549333e-02
## 5-243000      2.155757e-02   8.977721e-03
## 5-243123      1.288171e-02   5.848436e-03
## 5-243181      1.457440e-02   1.113642e-03
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## 5-243317      -1.082845e-02  1.162198e-02
## 5-243377      -8.966276e-03  -5.439549e-03
## 5-243404      1.352921e-01   -7.097642e-03
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## 5-243560      6.142647e-03   -2.992858e-04
## 5-243645      6.101433e-06   -6.771732e-03
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## 5-243665      -2.336822e-02  -2.130720e-02
## 5-243742      1.215326e-02   3.950546e-03
## 5-243778      1.031092e-02   7.097149e-03
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## 5-243865      5.694057e-02   6.310065e-02
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## 5-243969      -3.570625e-03  -3.296465e-03
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## 5-244083      6.082321e-03  -1.300315e-04
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## 5-244203      1.237224e-01   4.725208e-02
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## 5-244398      -1.125882e-02  1.289861e-02
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## 5-244560      9.637008e-03   3.833775e-02
## 5-244579      3.409541e-03   1.104642e-02
## 5-244647      6.096596e-03   -7.276435e-04
## 5-244667      -2.361638e-03  1.888566e-02
## 5-244669      -3.058790e-02  -4.549118e-03
## 5-244732      3.357126e-02   3.543907e-02
## 5-244746      -1.681289e-02  4.210054e-03
## 5-244802      -1.138590e-02  1.225891e-02
## 5-244843      -2.476101e-02  -5.736493e-03
## 5-244882      1.008000e-02   4.332278e-03
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## 5-245114     -1.885333e-03  -8.115259e-03
## 5-245149      6.236820e-03   1.771815e-02
## 5-245211     -2.204470e-03  -1.948554e-02
## 5-245269      3.507708e-03   9.522526e-03
## 5-245288     -4.651141e-02  -3.086054e-02
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## 5-245460      1.860084e-03   2.393819e-02
## 5-245473     -2.366323e-02   1.121536e-02
## 5-245497      3.233738e-02   1.430441e-02
## 5-245497_2    -6.505651e-02  -2.811569e-02
## 5-245509      2.770279e-02  -9.612098e-03
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## 5-245890     -2.735548e-02  -5.690537e-03
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## 5-246410     -3.076274e-02  -3.342189e-02
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## 5-246596      1.920970e-03  -5.229481e-03
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## 5-247025      1.473252e-02   1.170606e-02
## 5-247069      1.124037e-03  -6.469059e-03
## 5-247331      1.429871e-02   1.127585e-02
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## 5-247561      3.994871e-02 -1.478781e-02
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## 5-247627      2.076449e-02  9.194648e-03
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## 5-247729      -2.685480e-02 -1.293407e-02
## 5-247747      1.433162e-02  5.970453e-03
## 5-247852      2.427559e-03  5.492248e-02
## 5-247865      3.416266e-03  4.287993e-03
## 5-247885      -3.805952e-02 -3.922574e-02
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## 5-248031      3.213296e-02  9.328284e-03
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## 5-248167      -1.339975e-02 -7.692891e-02
## 5-248189      -1.892592e-02  3.700356e-02
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## 5-248299      4.790023e-03  4.662781e-02
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## 5-249154      -1.334303e-02 -3.727086e-03
## 5-249239      -4.829016e-02  7.513780e-02
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## 5-249577  2.780978e-03  8.149943e-03
## 5-249663 -5.112852e-03 -1.283881e-02
## 5-249683  4.550607e-02  1.588417e-02
## 5-249699  2.935307e-02 -1.201575e-02
## 5-249716  2.935307e-02 -1.201575e-02
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## 6-250070  6.059263e-02  1.499056e-02
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## 6-250318  1.278320e-02 -4.041578e-05
## 6-250398 -2.754843e-02  1.288549e-03
## 6-250411  2.861126e-02  5.563922e-02
## 6-250502 -2.813606e-02 -4.897132e-02
## 6-250528 -3.543052e-04  2.831784e-03
## 6-250587 -2.690810e-02  6.059867e-02
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## 6-250703  1.204433e-02  3.874811e-06
## 6-250726 -3.079650e-02 -3.214047e-02
## 6-250736 -2.723049e-02 -9.337456e-04
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## 6-250884 -1.524707e-02 -9.518873e-03
## 6-250945 -5.160662e-04  2.312276e-04
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## 6-251130 -2.871968e-02  1.748174e-02
## 6-251259  1.031474e-02  5.650793e-03
## 6-251281  5.236536e-02 -8.958260e-03
## 6-251307  1.768506e-02 -6.058644e-04
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## 6-251680 -3.654919e-02 -7.555911e-03
## 6-251684 -1.021030e-05 -4.362281e-03
## 6-251792 -2.010671e-02 -2.633826e-02
## 6-251858 -3.982682e-02 -3.759450e-03
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## 6-251953 -9.191043e-03 -6.974108e-03
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## 6-252063  3.243136e-02 -4.989108e-02
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## 6-252395  5.236536e-02 -8.958260e-03
## 6-252396  9.179797e-05  5.328696e-03
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## 6-253884 -5.169852e-02 -8.547424e-03
## 6-254007  3.788969e-03 -1.044029e-03
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## 6-254534      1.545228e-02  -2.318717e-03
## 6-254559      2.165176e-03  -1.125716e-01
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## 6-254646     -4.688705e-03   3.863557e-03
## 6-254647     -7.466166e-04  -6.854708e-03
## 6-254682      1.376913e-02   9.016721e-03
## 6-254689     -3.972514e-02  -2.275776e-02
## 6-254695     -1.235698e-02   7.142795e-03
## 6-254775      7.729790e-03  -4.323666e-05
## 6-254806      7.145797e-02  -1.275597e-01
## 6-254832      1.127965e-02  -1.013958e-02
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## 6-254906     -3.049980e-02  -3.160517e-02
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## 6-254961      9.137363e-03   1.292763e-02
## 6-254990     -2.382142e-03  -1.637186e-02
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## 6-255229     -3.494379e-02  -2.079882e-02
## 6-255245      2.399117e-02  -4.383580e-02
## 6-255376      1.686198e-03  -2.253203e-02
## 6-255454     -5.274024e-03   1.834161e-03
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## 6-255659      4.714158e-02  -1.653489e-02
## 6-255662      3.420990e-02  -2.357618e-02
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## 6-255786     -1.941905e-03   4.742768e-03
## 6-255957      1.887704e-02  -7.468592e-03
## 6-255961     -1.038759e-02   1.859490e-02
## 6-255985     -1.521296e-02  -4.996592e-02
## 6-255995      3.019289e-02   7.513617e-02
## 6-256040      6.276048e-02   1.201513e-02
## 6-256077      1.367434e-02  -3.026505e-02
## 6-256118     -7.588815e-03   4.192314e-02
## 6-256165     -7.694287e-03   1.208926e-02
## 6-256182      1.363210e-02   2.557338e-03
## 6-256187      1.859933e-02  -4.395646e-03
## 6-256212     -8.858195e-02   5.950843e-03
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## 6-256529      5.530752e-02   7.131096e-02
## 6-256584      -2.797965e-03  -9.819741e-04
## 6-256585      4.313321e-02   -4.495321e-02
## 6-256606      7.867610e-02   5.814559e-04
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## 6-256941      -2.766856e-03   -4.947719e-04
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## 6-257526      -1.344584e-02   4.681095e-02
## 6-257534      -4.627505e-03   -3.686420e-03
## 6-257551      -6.526567e-03   7.623092e-03
## 6-257582      2.811875e-04   -7.985091e-03
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## 6-267663       1.038344e-02  1.562321e-03
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## 6-267841      -1.613993e-02 -5.417849e-02
## 6-267855      -8.886672e-03 -6.209050e-03
## 6-267883      -4.706335e-02  6.762744e-03
## 6-267896       9.511728e-03 -7.155900e-03
## 6-267933       1.636068e-03  3.986926e-02
## 6-267940      -2.541902e-03  9.589106e-03
## 6-268026      -1.464915e-02 -5.483962e-02
## 6-268029      -2.157373e-02 -7.099451e-04
## 6-268041      -1.056677e-02  8.001555e-03
## 6-268082       1.283550e-02  3.484329e-02
## 6-268173      -1.001912e-02 -7.097514e-03
## 6-268194      -1.166516e-02 -5.679338e-02
## 6-268208       4.448487e-04  3.341989e-02
## 6-268218      -4.009352e-02 -3.816206e-02
## 6-268299       1.981467e-02  4.560051e-03
## 6-268356       5.011408e-03 -2.296348e-04
## 6-268379      -3.107208e-02 -3.515221e-02
## 6-268608       7.771073e-03  3.723450e-03
## 6-268610      -1.359502e-02 -1.922767e-02
## 6-268683       3.846964e-02  3.087753e-02
## 6-268708      1.038163e-03 -8.779807e-03

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## 6-268747    1.851506e-03  4.014015e-02
## 6-268758    -4.350700e-05  -6.137240e-03
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## 6-268896    9.340004e-03  -4.625123e-03
## 6-268915    -8.052580e-03  -3.654143e-03
## 6-268920    4.873678e-02  -2.854538e-02
## 6-268957    1.998615e-02  3.437004e-02
## 6-268962    1.082623e-02  -1.047632e-03
## 6-268977    2.164599e-02  2.680506e-03
## 6-269002    6.878552e-04  -4.916281e-03
## 6-269058    -9.459107e-03  2.615429e-02
## 6-269060    1.082623e-02  -1.047632e-03
## 6-269083    -1.906165e-03  3.386228e-03
## 6-269163    -1.716395e-02  5.212720e-02
## 6-269195    2.778522e-03  -8.506608e-03
## 6-269210    2.163427e-02  2.032471e-03
## 6-269233    -3.315612e-03  8.043210e-03
## 6-269256    -1.866019e-02  -9.501545e-04
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## 6-269358    4.084866e-03  -5.712094e-03
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## 6-269376    1.905916e-03  5.916479e-03
## 6-269433    1.337544e-02  5.019783e-03
## 6-269488    4.604057e-03  1.346104e-02
## 6-269495    1.082268e-02  -1.623228e-03
## 6-269507    2.047792e-02  2.166350e-03
## 6-269569    -3.801625e-02  2.630452e-04
## 6-269593    -1.227579e-03  -2.509225e-02
## 6-269602    -1.870213e-02  -1.931578e-02
## 6-269633    1.277143e-04  -1.844547e-02
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## 6-269740    -1.466588e-03  -6.201560e-03
## 6-269794    9.225815e-04  -5.248943e-03
## 6-269800    -9.338533e-03  3.861921e-03
## 6-269862    -7.941060e-03  -3.137168e-02
## 6-269871    2.142794e-02  3.521477e-02
## 6-269919    2.679418e-03  -2.122237e-02
## 6-269945    -1.262664e-02  3.761765e-02
## 6-270013    -9.338533e-03  3.861921e-03
## 6-270014    -1.092607e-01  -6.109316e-02
## 6-270054    -1.125734e-03  -3.525431e-03
## 6-270088    1.036839e-02  -3.792639e-03
## 6-270095    3.651527e-02  -1.203901e-02
## 6-270158    -2.876702e-03  -1.003916e-02
## 6-270166    2.658601e-03  2.759436e-03
## 6-270173    5.504200e-02  3.030436e-02
## 6-270212    4.574283e-02  -1.644371e-02
## 6-270224    7.802486e-02  -1.106209e-04
## 6-270250_2   1.036839e-02  -3.792639e-03
## 6-270260    -2.295884e-02  2.315728e-02
## 6-270323    -2.295884e-02  2.315728e-02
## 6-270330    1.098637e-02  -6.917774e-04
## 6-270436    -1.138492e-03  -7.268978e-03

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## 6-270438      1.049549e-02  3.169307e-03
## 6-270458     -4.827662e-02 -2.479550e-02
## 6-270465      2.128538e-03  7.916674e-03
## 6-270521      4.987926e-03 -3.373790e-03
## 6-270535     -1.978869e-02 -5.307077e-03
## 6-270563     -2.673128e-02  4.702622e-03
## 6-270564      1.049549e-02  3.169307e-03
## 6-270589      7.802486e-02 -1.106209e-04
## 6-270608     -7.530353e-03  6.732776e-03
## 6-270617     -3.131871e-03 -9.128312e-03
## 6-270751      1.049549e-02  3.169307e-03
## 6-270751_2    2.477796e-03  8.476245e-03
## 6-270797     -2.890746e-02 -1.912784e-02
## 6-270798      1.087669e-02 -3.621042e-03
## 6-270824      1.922560e-02 -6.171020e-02
## 6-270872      9.225815e-04 -5.248943e-03
## 6-270917      2.809374e-03 -1.048788e-02
## 6-270929      1.139082e-02  1.093930e-03
## 6-270964     -1.060208e-02 -3.603191e-03
## 6-270966      1.373703e-02  3.029512e-02
## 6-271190      4.574283e-02 -1.644371e-02
## 6-271219      1.985765e-02  7.393487e-03
## 6-271273     -1.421469e-02  2.331005e-02
## 6-271282      1.271912e-02  3.327609e-04
## 6-271365     -2.948401e-02 -2.352734e-02
## 6-271373      3.352398e-02 -5.372658e-02
## 6-271426      1.038147e-02 -3.110189e-03
## 6-271540      1.118817e-02 -1.640516e-03
## 6-271603     -1.677617e-02  4.047955e-02
## 6-271612      3.352398e-02 -5.372658e-02
## 6-271719      1.455590e-02  2.138084e-02
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## 6-271782      9.225815e-04 -5.248943e-03
## 6-271896      1.246152e-02 -1.347530e-03
## 6-271916_2   -1.354294e-02 -8.737652e-03
## 6-272037      9.293094e-03 -1.930120e-03
## 6-272054     -2.723383e-02  1.363920e-03
## 6-272107      1.683643e-02  4.585537e-02
## 6-272137     -1.083530e-02  3.264564e-02
## 6-272152     -4.408221e-02 -4.592029e-02
## 6-272174     -1.793985e-02  1.235236e-02
## 6-272211     -2.418372e-03  1.055478e-02
## 6-272247      1.802071e-03 -5.639532e-03
## 6-272286     -4.471461e-03  1.647580e-02
## 6-272305     -6.878038e-02 -4.243557e-02
## 6-272328      1.495514e-02  3.183255e-03
## 6-272355     -2.418372e-03  1.055478e-02
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## 6-272373     -3.708861e-03  2.772650e-03
## 6-272387     -2.217475e-03 -1.128003e-02
## 6-272572      1.143552e-02 -1.272712e-03
## 6-272601      1.892778e-03 -6.001724e-03
## 6-272602      1.269703e-02 -1.241064e-02
## 6-272624     -6.053127e-03 -2.676218e-03

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## 6-272654      1.195500e-02  3.947675e-03
## 6-272692      1.219486e-02  1.009601e-03
## 6-272725      1.065610e-02  3.062062e-03
## 6-272733      3.561824e-03  8.338468e-03
## 6-272746      -8.655604e-03 -1.920146e-02
## 6-272750      5.244130e-03  -4.342932e-02
## 6-272816      -8.236761e-03 -4.328288e-03
## 6-272986      3.988487e-03  4.008512e-02
## 6-272997      9.244968e-02  -9.160891e-03
## 6-273033      1.382312e-02  6.816096e-04
## 6-273089      -3.717737e-02 -2.326792e-03
## 6-273101      7.317182e-03  1.821962e-03
## 6-273110      1.870930e-02  5.059468e-03
## 6-273131      -9.377717e-03 -3.651268e-02
## 6-273151      -9.234044e-03  9.943627e-03
## 6-273238      1.013197e-02  4.552363e-03
## 6-273245      -1.865911e-02  1.512098e-02
## 6-273370      1.192198e-03  -5.300068e-03
## 6-273409      1.143552e-02  -1.272712e-03
## 6-273442      3.850012e-03  -5.125557e-03
## 6-273480      -6.012544e-03 -2.570133e-03
## 6-273482      1.862677e-03  -8.773942e-03
## 6-273684      1.352282e-02  -4.848577e-04
## 6-273719      2.170500e-02  8.647865e-03
## 6-273722      -4.235029e-03 -3.018028e-03
## 6-273764      6.298402e-03  -4.913904e-03
## 6-273835      -1.926001e-02 -1.167575e-03
## 6-273866      -2.083997e-02  1.394706e-03
## 6-273953      -3.655950e-02 -2.974920e-02
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## 6-274177      -1.398628e-02  1.296032e-02
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## 6-274196      5.799110e-04  -6.301049e-03
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## 6-274224      3.275787e-04  -4.074592e-03
## 6-274226      3.824697e-02  9.695120e-03
## 6-274268      -6.162999e-03 -1.678680e-03
## 6-274285      -2.572230e-02  6.161379e-02
## 6-274313      -6.162999e-03 -1.678680e-03
## 6-274332      3.647452e-02  6.766647e-02
## 6-274393      1.429376e-02  4.272859e-03
## 6-274409      -1.303011e-03 -5.829944e-03
## 6-274428      1.122863e-02  3.769430e-03
## 6-274443      -5.570330e-03  2.179850e-02
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## 6-274489      -9.402016e-03 -3.936318e-02
## 6-274495      -4.193903e-02 -1.479358e-03
## 6-274501      -2.375204e-02 -3.084261e-02
## 6-274504      -1.934165e-02  5.077410e-02
## 6-274522      1.090672e-02  -8.227097e-07
## 6-274525      1.932434e-03  -4.796110e-03
## 6-274532      1.099977e-02  4.635170e-03

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## 6-274559 -3.577831e-02 -1.727082e-02
## 6-274570 2.052365e-02 -4.922346e-02
## 6-274581 1.830984e-02 -6.896852e-03
## 6-274616 7.360884e-03 6.097530e-03
## 6-274623 -2.287032e-02 -3.338392e-03
## 6-274735 4.547398e-03 3.143769e-02
## 6-274774 -4.636758e-02 -3.421337e-03
## 6-274872 4.701490e-02 -7.377100e-03
## 6-274882 4.120691e-03 -1.164353e-02
## 6-274901 -2.339038e-02 1.123027e-03
## 6-274924 3.299148e-02 1.957580e-03
## 6-274928 -3.188114e-02 -2.347129e-02
## 6-274936 -8.689217e-04 8.409612e-02
## 6-274943 3.484894e-02 6.350859e-02
## 6-274948 1.692868e-02 1.128600e-03
## 6-274953 3.988152e-03 -2.173661e-02
## 6-275099 -9.587346e-03 -3.772799e-02
## 6-275161 -2.156404e-03 -5.601544e-03
## 6-275215 -1.443437e-02 -2.509355e-03
## 6-275234 -2.132261e-02 -8.351159e-02
## 6-275240 -6.381871e-04 -7.347075e-03
## 6-275266 1.291550e-02 5.376150e-03
## 6-275396 7.954127e-03 -3.409608e-02
## 6-275425 2.751915e-03 2.457766e-03
## 6-275431 2.657590e-02 6.970439e-03
## 6-275441 -2.822276e-02 -1.261422e-02
## 6-275482 2.457433e-03 1.767497e-02
## 6-275623 1.739559e-03 -3.735434e-03
## 6-275661 -4.206594e-04 -4.203485e-03
## 6-275684 2.647720e-03 6.162769e-03
## 6-275718 1.039235e-03 -1.729377e-02
## 6-275822 1.039235e-03 -1.729377e-02
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## 6-275917 1.078333e-04 -1.461215e-03
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## 6-276077 7.117250e-03 2.540338e-02
## 6-276096 -1.994779e-03 8.633951e-04
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## 6-276257 2.428031e-03 1.825129e-02
## 6-276290 3.235063e-03 3.168338e-03
## 6-276380 -5.320950e-02 -4.230788e-02
## 6-276389 5.530305e-03 1.601063e-02
## 6-276405 1.682997e-03 -8.455305e-03
## 6-276443 -7.100341e-03 3.473036e-02
## 6-276443_2 8.154078e-04 -7.943322e-04
## 6-276492 1.755002e-03 7.194097e-03
## 6-276492_2 -6.690116e-03 3.841566e-03
## 6-276496 -3.269555e-02 -4.336275e-03
## 6-276511 8.823126e-03 2.523722e-02
## 6-276517 4.181389e-03 9.827282e-03
## 6-276548 -3.122883e-03 6.886918e-03
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## 6-276554 -2.948544e-02 -2.255657e-02

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## 6-276778     -3.500061e-02  -4.208047e-03
## 6-276858     -1.833248e-02  -1.596867e-02
## 6-276910     -6.292951e-02  2.464745e-02
## 6-276914      2.050108e-04  5.332207e-03
## 6-276924     -1.808484e-02  2.237638e-03
## 6-277025      2.085517e-02  7.634878e-03
## 6-277087     -4.467900e-03  2.069692e-02
## 6-277092     -4.169832e-03  -5.346027e-03
## 6-277165      2.513808e-03  1.019393e-02
## 6-277212      8.240918e-03  1.177758e-02
## 6-277232      3.859103e-03  -1.410655e-02
## 6-277294      1.693207e-03  -2.393707e-03
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## 6-277398      3.136219e-02  2.525132e-02
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## 6-278272     -1.748625e-02  -3.547192e-03
## 6-278299      7.889755e-03  2.913183e-03
## 6-278303      1.069354e-03  -5.800818e-03
## 6-278316      8.631369e-03  1.232412e-02
## 6-278453     -1.567369e-02  3.465106e-02
## 6-278467      3.703977e-03  2.875163e-03
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## 6-278697      4.048611e-03  -1.818539e-02
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## 6-278770      3.441627e-03  3.306707e-03
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## 6-278960      4.858729e-03  2.377237e-02
## 6-278966      -5.158046e-02  2.237855e-02
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## 6-279021      4.020440e-03  7.317285e-03
## 6-279028      -5.273939e-02  -1.333320e-01
## 6-279085      -2.340875e-02  1.225429e-02
## 6-279090      -1.908791e-02  5.012059e-03
## 6-279211      5.048360e-04  -1.374990e-02
## 6-279219      3.541195e-02  9.302615e-02
## 6-279261      -1.680200e-02  -2.164495e-02
## 6-279295      1.711214e-02  2.365043e-03
## 6-279296      5.607684e-03  -7.308543e-03
## 6-279337      -9.869359e-03  5.150279e-02
## 6-279447      -4.084524e-03  1.027906e-02
## 6-279560      5.650263e-03  5.481958e-04
## 6-279562      1.629175e-02  -4.146291e-03
## 6-279660      2.250320e-03  -1.085035e-02
## 6-279661      7.314158e-03  -2.776747e-03
## 6-279687      -2.629856e-03  5.162191e-03
## 6-279697      -1.374102e-03  3.730706e-03
## 6-279737      1.847296e-03  -6.708515e-03
## 6-279740      -2.462056e-03  1.029577e-04
## 6-279755      -2.334446e-02  1.138496e-02
## 6-279818      -1.834883e-02  -1.278033e-03
## 6-279838      1.630704e-03  -3.976730e-03
## 6-279840      1.629175e-02  -4.146291e-03
## 6-280013      -7.000405e-02  -6.419565e-02
## 6-280109      2.619847e-02  3.048361e-02
## 6-280116      2.590333e-02  5.423720e-03
## 6-280127      -2.501519e-03  -2.408882e-04
## 6-280181      7.545082e-02  -6.728759e-05
## 6-280210_2    -1.779956e-03  9.769878e-03
## 6-280240      -1.300852e-02  -2.348360e-02
## 6-280281      -8.857646e-03  2.390806e-02
## 6-280310      2.827274e-03  8.750739e-03
## 6-280320      3.278654e-03  1.275744e-02
## 6-280381      -1.207544e-02  1.481389e-02
## 6-280395      -1.756864e-02  7.331346e-04
## 6-280469      1.417271e-02  2.656018e-03
## 6-280519      -5.887580e-02  -4.030098e-02
## 6-280589      -1.793603e-02  2.001789e-02
## 6-280602      -6.155160e-03  -4.812239e-04
## 6-280642      -1.109489e-02  1.349169e-02
## 6-280667      -2.578931e-02  1.178794e-02
## 6-280716      1.002609e-03  -4.079686e-03
## 6-280788      3.857240e-03  1.233896e-02
## 6-280822      -1.495756e-02  2.436619e-03
## 6-280822_2    9.762260e-04  -5.123437e-03

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## 6-280865 -9.047758e-03 -3.900614e-03
## 6-280869 -3.360264e-02 -4.483533e-03
## 6-280941 -2.893824e-02 -6.700550e-02
## 6-280954 -1.253790e-03  3.519336e-04
## 6-281006 -9.241386e-03  1.903767e-03
## 6-281179  8.974246e-03  3.798957e-03
## 6-281208  4.129757e-03 -4.596812e-03
## 6-281267 -1.398740e-02  5.008195e-03
## 6-281283  4.491689e-02 -1.525238e-02
## 6-281347 -2.708530e-02  1.050132e-02
## 6-281354 -1.588763e-02 -1.721672e-02
## 6-281354_2 -4.506213e-02 -1.353695e-02
## 6-281383 -3.530531e-02 -8.168500e-04
## 6-281388 -7.235014e-03 -1.819182e-03
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## 6-281493  9.110759e-03 -3.820704e-03
## 6-281499  1.675296e-03 -1.425827e-02
## 6-281550  8.857075e-02 -7.175973e-02
## 6-281579 -1.520636e-05 -9.430944e-03
## 6-281603  1.706125e-02 -5.875546e-03
## 6-281624  6.425866e-04 -1.072434e-02
## 6-281658  1.675296e-03 -1.425827e-02
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## 6-281769  1.500133e-02 -5.373306e-03
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## 6-281835 -2.344023e-02  1.889224e-02
## 6-281839  8.431728e-04  7.974465e-03
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## 6-281895 -2.708530e-02  1.050132e-02
## 6-282042  2.051638e-04 -1.692572e-02
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## 6-282069 -2.988650e-02 -1.217797e-02
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## 6-282153 -8.583670e-03 -2.306772e-03
## 6-282156  1.500133e-02 -5.373306e-03
## 6-282184 -3.508779e-03 -9.924079e-03
## 6-282216  7.984399e-02 -6.504320e-02
## 6-282250  1.800785e-01 -4.955099e-04
## 6-282276  1.243429e-02  1.614368e-02
## 6-282277  1.719416e-02  4.302430e-03
## 6-282325 -3.508779e-03 -9.924079e-03
## 6-282363  7.934408e-03  3.551882e-03
## 6-282460 -2.005136e-02 -1.032911e-02
## 6-282462 -6.579112e-03  1.283806e-02
## 6-282527 -4.738253e-02 -3.106355e-02
## 6-282535 -6.257693e-03  1.286579e-02
## 6-282573 -4.697744e-02 -3.873981e-02
## 6-282611  8.980345e-02 -6.868058e-02
## 6-282733  6.107532e-02 -4.195663e-02
## 6-282737  1.892860e-03 -5.066552e-03

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## 6-282764      2.204356e-02  5.799501e-03
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## 6-282803      -2.013077e-02  -3.111707e-03
## 6-282881      -5.544310e-02  -1.186770e-01
## 6-282903      -2.311761e-02  -7.783461e-03
## 6-282957      1.076732e-02  2.513993e-02
## 6-282962      -1.086391e-02  1.756874e-02
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## 6-283029      -3.451397e-02  -2.091157e-03
## 6-283037      -4.453642e-03  -1.268501e-02
## 6-283084      1.621620e-03  -3.998934e-03
## 6-283086      8.744449e-02  -6.896258e-02
## 6-283177      3.682425e-02  -2.940558e-02
## 6-283181      -1.272667e-02  -9.879560e-03
## 6-283234      2.318233e-03  1.065562e-02
## 6-283259      1.267459e-02  4.076230e-03
## 6-283263      -2.114053e-03  6.804606e-03
## 6-283289      -1.113942e-02  1.807734e-02
## 6-283473      -3.592571e-02  3.556177e-03
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## 6-283772      3.310438e-02  -3.364931e-02
## 6-283803      1.099302e-02  2.582310e-02
## 6-283825      -6.673206e-03  -2.624561e-02
## 6-283887      1.155846e-02  1.094118e-02
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## 6-283953      1.630116e-02  1.129830e-02
## 6-283963      8.356961e-02  -7.049167e-02
## 6-283982      -1.934902e-02  4.985176e-02
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## 6-284132      1.176128e-02  4.504689e-03
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## 6-284177      1.595133e-02  3.559085e-03
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## 6-284239      3.785177e-03  -5.777263e-03
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## 6-284642      -1.465159e-02  1.745513e-02
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## 6-285085 4.295003e-02 1.423772e-02
## 6-285128 -1.466408e-02 2.090534e-02
## 6-285164 -4.501049e-03 -2.770669e-03
## 6-285167 -8.315808e-03 -2.878117e-03
## 6-285185 3.873800e-03 -5.859459e-03
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## 6-285374 -2.018668e-04 -2.470072e-02
## 6-285433 3.999437e-02 -3.222972e-02
## 6-285475 -2.093204e-02 -2.232076e-03
## 6-285549 -1.576736e-02 -1.684905e-02
## 6-285558 -4.780708e-03 1.974599e-02
## 6-285613 -4.485322e-04 -9.366093e-03
## 6-285615 -1.850336e-02 3.718726e-03
## 6-285711 -1.850336e-02 3.718726e-03
## 6-285791 -6.276985e-04 3.053481e-03
## 6-285841 -3.446339e-02 8.416320e-03
## 6-285850 -9.602077e-03 2.828314e-02
## 6-285874 -1.308216e-02 2.315372e-02
## 6-285893 4.906442e-02 -2.455989e-02
## 6-285953 -1.012095e-02 -7.705938e-02
## 6-286031 3.903896e-02 1.898317e-02
## 6-286032 -1.414981e-02 1.100035e-02
## 6-286045 3.348871e-03 2.851223e-02
## 6-286097 5.384675e-02 -4.199188e-02
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## 6-286189 -7.198853e-04 -1.039775e-02
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## 6-286409 -2.436791e-02 -5.022891e-04
## 6-286427 -1.436364e-02 -6.214471e-03
## 6-286475 3.457488e-03 7.608745e-03
## 6-286476 2.245544e-02 -1.030931e-02
## 6-286582 8.032210e-02 -5.340474e-04
## 6-286583 -1.847543e-02 2.638786e-03
## 6-286625 1.400202e-03 -2.136519e-02
## 6-286661 1.180990e-02 -5.137184e-03
## 6-286777 -9.862611e-03 1.567241e-02
## 6-286780 1.160781e-02 4.261578e-02
## 6-286825 2.613301e-02 -7.403612e-03
## 6-286883 4.457877e-02 -3.675122e-02
## 6-286941 1.117613e-02 1.267038e-03
## 6-286987 1.298043e-03 -1.518456e-02
## 6-287014 -3.658145e-02 1.619397e-01
## 6-287167 6.366232e-02 -6.496363e-02
## 6-287208 1.217998e-02 -6.925354e-03
## 6-287241 6.366232e-02 -6.496363e-02
## 6-287279 -2.363146e-02 5.261095e-03
## 6-287340 1.557827e-02 4.554442e-03
## 6-287352 1.630624e-02 2.452583e-02

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## 6-287421      1.518413e-02  4.915121e-03
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## 6-287608     -1.940506e-02 -8.947609e-03
## 6-287633     -1.102293e-02 -2.666221e-03
## 6-287666      3.551388e-02  1.113696e-02
## 6-287681      1.642922e-02  4.467816e-02
## 6-287682     -5.137928e-03 -1.216490e-02
## 6-287697     -2.901006e-02 -4.068532e-02
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## 6-287774      3.828148e-03  1.168215e-02
## 6-287793      1.412586e-02  2.597213e-02
## 6-287824      4.398717e-02 -3.376596e-02
## 6-287984     -6.181380e-03  3.224387e-02
## 6-288075     -2.232512e-02 -7.627849e-03
## 6-288126      1.356511e-03 -1.004826e-02
## 6-288132      3.828148e-03  1.168215e-02
## 6-288187     -4.891782e-02 -5.230133e-02
## 6-288233      1.228920e-03 -7.295935e-03
## 6-288250      3.828148e-03  1.168215e-02
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## 6-288486     -6.424115e-03  1.414112e-03
## 6-288504     -2.828818e-02  2.343161e-02
## 6-288507      7.609653e-02  6.998845e-04
## 6-288546     -4.186708e-02 -7.014342e-03
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## 6-288664     -5.587834e-03  1.094278e-02
## 6-288737     -4.050175e-02  2.266683e-02
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## 6-288787     -2.083139e-02  4.842211e-03
## 6-288829      8.446794e-03  1.460924e-02
## 6-288837      1.807503e-02  3.732868e-02
## 6-288857     -1.071494e-02 -3.689660e-02
## 6-288861     -2.037730e-03 -2.250512e-02
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## 6-288976     -4.227894e-03  3.731327e-03
## 6-289004     -2.084259e-03  1.963077e-02
## 6-289086      2.127215e-02  4.760933e-02
## 6-289106      4.155658e-02  3.196624e-03
## 6-289155      2.092076e-02  4.742558e-02
## 6-289242      5.045140e-02 -3.938020e-02
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## 6-289298     -1.740705e-02  4.873494e-03
## 6-289306     -1.355981e-03  1.753145e-02
## 6-289307      1.180994e-02  6.609386e-03
## 6-289327      7.431708e-03 -6.160669e-03
## 6-289335      1.906819e-02  1.708206e-03
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## 6-289412      2.171448e-03 -3.067670e-02

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## 6-289521 -4.371821e-02 -5.524737e-02
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## 6-289698 -3.537670e-02  1.197291e-02
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## 6-289860 -1.579887e-02  2.469006e-02
## 6-289945  1.282010e-03 -6.685718e-03
## 6-289992 -1.529415e-02  4.904233e-02
## 6-290035  1.282010e-03 -6.685718e-03
## 6-290039 -1.470962e-02  2.365671e-02
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## 6-290153  1.199944e-02  5.612055e-03
## 6-290160  6.001610e-03 -1.167624e-03
## 6-290198  1.011494e-02 -2.528587e-05
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## 6-290637 -1.330758e-02  3.366980e-02
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## 6-290828 -2.700397e-04 -7.525197e-03
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## 6-291269  1.568575e-02 -1.727985e-03
## 6-291324 -3.599508e-02 -9.070051e-03
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## 6-291566 -1.045759e-03 -1.221167e-02
## 6-291620 -6.278125e-03 -3.059441e-03
## 6-291693  3.133088e-03 -5.689472e-03
## 6-291695  4.193993e-03  3.211752e-02
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## 6-291806  5.333595e-04  4.454566e-03
## 6-291812 -1.665314e-02 -1.717543e-02
## 6-291946 -2.842693e-02 -1.607195e-02
## 6-291986  1.221530e-02 -3.030394e-03
## 6-292001 -2.197090e-02  5.406260e-02
## 6-292011  5.384832e-02 -3.915959e-04
## 6-292028 -2.504076e-03 -1.350915e-02
## 6-292029  1.664412e-02  1.237154e-03
## 6-292041 -6.236327e-03  1.711140e-03
## 6-292081 -2.960364e-03  1.223176e-02

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## 6-292162      7.471207e-04 -1.851130e-03
## 6-292174      -4.726835e-02 -1.161642e-02
## 6-292204      -3.370769e-03 -1.296831e-03
## 6-292218      -3.186595e-03 -1.466453e-02
## 6-292265      1.838018e-02  3.381407e-02
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## 6-292382      1.024172e-02 -2.741058e-03
## 6-292396      4.413548e-03 -1.059446e-02
## 6-292397      8.658965e-03  2.061774e-02
## 6-292398      -7.151409e-02  1.918559e-03
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## 6-292429      -8.647290e-02 -3.078863e-02
## 6-292497      3.405180e-03  7.052868e-03
## 6-292638      3.278911e-02 -2.984888e-02
## 6-292642      3.373035e-03  3.418192e-02
## 6-292648      7.643860e-03  2.037345e-02
## 6-292673      2.413646e-03  4.573522e-03
## 6-292676      4.413548e-03 -1.059446e-02
## 6-292686      4.747950e-02 -3.625767e-02
## 6-292708      -8.449525e-03  1.662831e-02
## 6-292723      2.413646e-03  4.573522e-03
## 6-292735      1.967734e-03 -7.791589e-03
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## 6-292855      1.747906e-02  4.611451e-02
## 6-292872      6.123240e-02  2.076205e-02
## 6-292876      5.070230e-03 -3.419773e-02
## 6-292918      -1.914261e-03 -6.599482e-03
## 6-292999      -2.730692e-02 -3.009764e-02
## 6-293025      -2.237507e-02 -7.253721e-03
## 6-293047      8.506390e-03  2.298126e-02
## 6-293049      -2.254114e-03 -1.299591e-02
## 6-293092      -2.546263e-03 -1.186796e-02
## 6-293218      -5.830559e-02  2.071026e-02
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## 6-293287      8.506390e-03  2.298126e-02
## 6-293313      7.884147e-03  3.047893e-02
## 6-293315      -4.250588e-03 -2.007982e-02
## 6-293342      -2.528337e-02  2.956511e-02
## 6-293408      2.567836e-02  4.498151e-03
## 6-293430      1.767462e-02  4.311170e-03
## 6-293505      3.278911e-02 -2.984888e-02
## 6-293700      -1.658300e-02  7.512094e-03
## 6-293723      3.182167e-02 -2.816674e-02
## 6-293748      -5.901812e-03 -7.895567e-04
## 6-293899      -3.144265e-02 -3.877403e-02
## 6-293903      1.485661e-03  9.869485e-04
## 6-293959      -5.468163e-04  2.848001e-03
## 6-294017      -1.115236e-02  3.801888e-02
## 6-294037      4.976742e-04  1.917420e-02
## 6-294046      1.671403e-02  1.269327e-02
## 6-294078      3.784432e-02  9.566559e-03

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## 6-294146     -3.399515e-02 -4.203845e-02
## 6-294150      3.359749e-03 -2.104097e-03
## 6-294173     -1.326872e-03 -6.154815e-03
## 6-294193      1.964667e-02  3.537126e-02
## 6-294200     -7.468581e-03  5.621487e-03
## 6-294247     -1.508301e-01 -4.430591e-02
## 6-294249      4.566057e-03 -9.417951e-03
## 6-294252     -4.936583e-03 -2.228140e-02
## 6-294263      2.802903e-03 -1.332839e-02
## 6-294308     -1.223983e-02 -6.402477e-02
## 6-294323      2.811438e-03  8.824363e-04
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## 6-294636      2.215828e-02  1.011795e-02
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## 6-294776     -4.193722e-02 -5.528134e-03
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## 6-295090     -1.271770e-02  3.101286e-02
## 6-295123      9.935080e-02  4.831624e-02
## 6-295150     -1.889468e-02 -7.628510e-03
## 6-295165      1.541017e-03 -5.495063e-03
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## 6-295415     -1.310324e-03  5.039813e-03
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## 6-295663      1.188007e-02 -4.254009e-02
## 6-295905     -3.211078e-02 -4.544813e-02
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## 6-295938     -5.591270e-04  1.112768e-02

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## 6-296129      -1.080441e-02 2.554467e-02
## 6-296162      4.926855e-02  1.083397e-02
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## 6-296305      1.970486e-03  3.067879e-02
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## 6-296433      1.130146e-02  -1.353780e-03
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## 6-296506      -2.158678e-02 -4.908919e-03
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## 6-297532      -5.722011e-03  5.010846e-04
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## 6-297933 -3.669620e-02 -1.107488e-02
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## 6-297998 3.639343e-03 1.518637e-02
## 6-298000 -2.084482e-02 -1.214977e-02
## 6-298026 1.262841e-02 6.426528e-03
## 6-298089 1.482017e-03 -5.200536e-03
## 6-298093 6.051725e-03 -3.778384e-03
## 6-298173 -3.277602e-03 8.750920e-03
## 6-298234 8.793933e-04 -1.609132e-02
## 6-298242 -1.082033e-02 2.578493e-02
## 6-298321 -4.121790e-03 -1.955102e-02
## 6-298375 8.793933e-04 -1.609132e-02
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## 6-298432 -1.768127e-02 1.792995e-02
## 6-298599 -1.140766e-03 -5.396097e-04
## 6-298609 -1.171695e-02 2.681635e-02
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## 6-298782 -7.352382e-02 -1.723041e-02
## 6-298785 -6.356531e-02 -2.275173e-02
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## 6-298830 -1.258745e-02 4.498323e-03
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## 6-299359 -3.066172e-02 1.537880e-02
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## 7-300117 1.133266e-02 -3.199197e-02
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## 7-300199 5.569414e-02 1.234129e-02
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## 7-300274 -1.028558e-02 1.351401e-03
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## 7-300567 -4.216531e-03 7.534051e-05
## 7-300582 1.158572e-02 -1.746134e-02
## 7-300633 -1.554545e-02 -1.098670e-03
## 7-300664 -3.759105e-02 -3.048378e-02
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## 7-300878 4.928537e-03 -2.436290e-03
## 7-300884 1.050587e-02 -6.727168e-03
## 7-300894 1.208625e-02 3.990661e-03
## 7-300899 6.880489e-03 3.392663e-02
## 7-300900 -5.121458e-03 4.822983e-03
## 7-300936 -1.350209e-02 4.420673e-02
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## 7-301167_2 1.343961e-02 4.181160e-02
## 7-301198 7.908962e-03 1.571115e-02
## 7-301212 -1.849249e-04 1.075029e-02
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## 7-301297 1.595414e-03 -4.491346e-03
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## 7-301474 -1.264868e-02 1.930126e-02
## 7-301530 -1.109020e-02 7.300733e-03
## 7-301550 -4.927780e-03 -9.862717e-03
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## 7-301610_2 -5.902054e-02 -8.159848e-03
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## 7-301787 -2.634728e-02 8.119206e-03
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## 7-302252      1.129700e-02  5.310963e-03
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## 7-303195      -5.920725e-03  -1.200234e-02
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## 7-303207      1.595414e-03  -4.491346e-03
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## 7-303876     -3.080038e-02  5.772898e-03
## 7-303881     -6.133430e-02 -8.051568e-03
## 7-303892      5.902680e-03  2.865618e-02
## 7-303920      1.066202e-02 -1.687697e-03
## 7-303948     -2.067381e-02 -2.626083e-03
## 7-303958     -3.005085e-02 -2.831319e-02
## 7-303969     -1.166507e-02  1.400811e-02
## 7-304010     -1.384249e-02 -7.547417e-02
## 7-304023     -3.010788e-02 -3.066679e-02
## 7-304086     -2.588931e-02 -3.252213e-02
## 7-304186     -3.025352e-02  6.097540e-03
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## 7-304262      1.488413e-02 -1.676609e-03
## 7-304332      1.511786e-03  1.023763e-02
## 7-304348      9.208236e-03 -1.990137e-02
## 7-304371     -7.212169e-03 -1.703487e-02
## 7-304395      1.545815e-02 -1.961576e-03
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## 7-304443     -1.823664e-02  1.646847e-02
## 7-304503      6.027569e-03  2.265954e-02
## 7-304551     -1.248457e-02  1.355549e-02
## 7-304566      2.741180e-03 -4.993725e-03
## 7-304604      1.136504e-02  6.356989e-05
## 7-304611      1.351173e-02  2.976065e-03
## 7-304720      7.366962e-03 -1.143284e-03
## 7-304880     -1.248457e-02  1.355549e-02
## 7-304881     -4.340447e-02 -5.594718e-03
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## 7-305106      8.455573e-03  1.644079e-02
## 7-305110      4.366218e-02 -1.951041e-02
## 7-305134      1.854147e-02  9.901534e-03
## 7-305196      1.427728e-02  2.503998e-02
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## 7-305449 1.586338e-02 9.030484e-03
## 7-305516 6.130026e-03 1.827836e-02
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## 7-305599 -2.100034e-02 -9.360112e-03
## 7-305617 1.586338e-02 9.030484e-03
## 7-305621 7.000402e-03 2.420632e-02
## 7-305637 8.614921e-03 9.792630e-04
## 7-305640 -1.616093e-03 5.217743e-03
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## 7-305743 1.243644e-02 1.951581e-02
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## 7-305956 3.186995e-03 4.262828e-03
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## 7-306139 2.394943e-04 3.133666e-04
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## 7-306717 -1.359484e-02 8.251467e-03
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## 7-306786 -1.490858e-02 1.404556e-02
## 7-306821 3.334144e-03 1.522062e-02
## 7-306826 -7.548281e-02 -5.810449e-03
## 7-306894 -1.209035e-02 -9.349447e-03
## 7-306921 -2.025803e-02 7.703050e-03
## 7-306959 3.627647e-03 1.605514e-02
## 7-306978 1.906618e-03 -8.227222e-03
## 7-307119 -2.466435e-02 -3.705294e-02
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## 7-307207 8.879145e-04 -1.375756e-03
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## 7-307252 9.876511e-03 -5.122330e-03
## 7-307386 5.623916e-03 9.353645e-03
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## 7-307482 -1.244423e-02 2.432998e-03

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## 7-307570      2.757269e-02  3.275830e-03
## 7-307607      1.322674e-02  2.309629e-03
## 7-307651      2.571547e-03  -2.766837e-02
## 7-307739      2.462854e-03  -1.929536e-03
## 7-307746      8.364996e-02  2.843282e-04
## 7-307775      6.868954e-03  4.287875e-04
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## 7-307785     -2.208769e-02  -2.008679e-02
## 7-307826      5.339932e-03  1.496935e-02
## 7-307891     -6.702327e-03  9.619752e-03
## 7-307898     -2.122995e-03  -2.790680e-03
## 7-307908      2.062252e-02  2.531389e-02
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## 7-307981     -4.121946e-02  -3.667900e-02
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## 7-308103      6.915385e-03  -6.197916e-03
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## 7-308314      4.961258e-03  1.471520e-02
## 7-308418      1.806069e-03  -2.080466e-03
## 7-308450      1.032085e-02  2.504916e-02
## 7-308476      2.070560e-02  -3.752841e-02
## 7-308505      1.349799e-02  -5.254499e-03
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## 7-308524     -1.155154e-02  8.266123e-03
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## 7-308680     -8.421897e-03  -2.957016e-03
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## 7-309494 -1.688796e-02 5.866555e-02
## 7-309513 -1.016197e-02 9.006924e-03
## 7-309557 1.292485e-03 8.762790e-03
## 7-309564 -5.978062e-03 -2.875963e-03
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## 7-309606 -1.203438e-02 2.629164e-02
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## 7-309742 -1.526713e-02 5.260987e-02
## 7-309844 -1.094475e-02 2.539756e-02
## 7-309872 -2.847193e-02 -2.522342e-03
## 7-309933 -4.096502e-02 2.332488e-03
## 7-309941 -1.203438e-02 2.629164e-02
## 7-310011 -2.506943e-02 -3.515293e-02
## 7-310024 -6.115650e-03 -2.513492e-02
## 7-310056 1.061555e-02 4.626576e-03
## 7-310065 -4.175714e-02 -9.532447e-03
## 7-310077 6.818449e-03 1.228512e-02
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## 7-310108 -1.930275e-03 -2.270450e-02
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## 7-310164 1.242401e-01 -4.999798e-02
## 7-310233 5.380032e-03 1.322117e-02
## 7-310274 -2.127409e-02 -7.328152e-03
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## 7-310940 -2.203801e-02 -1.190602e-02
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## 7-311338 1.726524e-03 -4.391158e-03
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## 7-316285 -3.731587e-02 -1.040300e-03
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## 7-316338 1.729412e-03 -6.356834e-03

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## 7-325404 4.981510e-03 4.436553e-03
## 7-325463 1.992391e-02 1.686675e-02
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## 7-329188 5.704625e-02 -4.229162e-02
## 7-329203 2.351665e-02 -7.947370e-03
## 7-329230 -2.213745e-02 -2.493621e-02
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## 7-329456 1.283345e-02 4.834773e-03
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## 7-330788      4.556760e-02  -1.744407e-02
## 7-330863     -4.318963e-03  9.397891e-04
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## 7-331232      6.423906e-03  2.020338e-02
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## 7-331367     -6.501802e-03  -3.584264e-03
## 7-331438      4.738697e-02  -3.935505e-02
## 7-331454      1.911340e-02  6.726636e-03
## 7-331456      3.678476e-02  -2.113470e-02
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## 7-331747      1.634298e-02  6.214832e-03
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## 7-331920      1.658194e-02  4.952565e-03
## 7-331967     -6.785697e-03  1.888542e-02
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## 7-332073     -1.298098e-02 -1.312990e-02
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## 7-334021 8.787437e-02 -3.281346e-02
## 7-334040 -1.707043e-03 -8.018904e-04
## 7-334063 -1.403993e-02 -2.456292e-03
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## 7-334283 -3.833157e-02 -2.615398e-02
## 7-334301 2.092916e-02 6.127244e-03
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## 7-342753 -2.841708e-02 -3.132111e-02
## 7-342774 -2.841708e-02 -3.132111e-02
## 7-342802 -1.117833e-02 1.217545e-02
## 7-342822 -2.841708e-02 -3.132111e-02
## 7-342832 4.167000e-03 -1.952807e-02
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## 7-342859 -1.031616e-02 -1.314447e-02

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## 7-343054      -1.143329e-03 -8.017406e-03
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## 7-343162      -6.512461e-03  1.680391e-02
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## 7-343271      1.279657e-02  6.200296e-03
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## 7-343676      1.034731e-02 -1.758229e-05
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## 7-343880      7.102826e-03  2.753003e-02
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## 7-344873      1.025796e-02  4.933620e-03
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## 7-344972      4.215468e-02  1.115233e-02
## 7-345062      -1.811290e-02  5.733107e-03
## 7-345064      6.816932e-03  1.742362e-02
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## 7-345191      -9.129916e-02 -8.389852e-02
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## 7-345379      5.935181e-03 -1.431684e-03
## 7-345421      -1.694389e-02 -1.088923e-02
## 7-345431      -2.275979e-02  5.152695e-03
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## 7-345480      -3.930423e-02 -2.208110e-02

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## 7-345716      5.215732e-03  7.550503e-04
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## 7-347800 -1.230984e-02 -3.949955e-02
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## 7-347995 1.389271e-02 -9.515841e-03
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## 7-348008 -1.369036e-02 3.220968e-02
## 7-348030 -2.407361e-02 2.108832e-03
## 7-348109 3.252507e-04 5.241183e-02
## 7-348123 1.637372e-02 2.083265e-03
## 7-348165 1.637372e-02 2.083265e-03
## 7-348204 8.039235e-03 1.137126e-02
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## 7-348227 1.958380e-02 5.017346e-03
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## 7-348252 -5.827611e-02 -6.733310e-02
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## 7-348569 -4.964906e-02 -2.078972e-02
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## 7-348639 1.024033e-02 -2.574427e-03
## 7-348698 2.207212e-02 -1.297573e-02
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## 7-348813 1.176789e-02 2.851998e-02
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## 7-349125 7.449321e-02 -4.119841e-02
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## 7-349134 5.215094e-04 -5.980785e-03
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## 8-350044      1.099556e-02  1.452251e-03
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## 8-350255      -1.342308e-02  4.801330e-03
## 8-350325      -2.503895e-02  2.470911e-02
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## 8-352184      -1.458373e-02  2.239172e-02
## 8-352211      6.720808e-03  -9.712330e-03
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## 8-352396 -4.224271e-03 6.728523e-03
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## 8-352471 1.393624e-02 1.505758e-03
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## 8-352483 -2.130935e-03 -1.415637e-02
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## 8-353346 2.847688e-03 -1.499383e-02
## 8-353346_2 9.706001e-03 -1.997358e-02
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## 8-355449      -2.304176e-03 -1.493145e-02
## 8-355460      -7.475567e-03 -1.539158e-02
## 8-355510      9.902244e-05 -7.919815e-03
## 8-355629      9.902244e-05 -7.919815e-03
## 8-355722      1.478946e-02  7.120206e-03
## 8-355731      1.684637e-02  9.970776e-03
## 8-355734      -2.777383e-02 -1.341249e-02

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## 8-355790      4.683345e-04  2.741729e-02
## 8-355874      4.604110e-02 -1.605380e-02
## 8-355884      -9.726259e-03 -3.664506e-03
## 8-355892      2.015866e-02  5.498340e-03
## 8-355928      -7.826791e-04  1.898558e-03
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## 8-356005      -1.340211e-02 -1.093964e-02
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## 8-356408      -2.292029e-02 -2.856834e-02
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## 8-356468      -4.676799e-03  1.083774e-02
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## 8-356563      -1.274394e-02  2.001634e-02
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## 8-356825      5.876646e-02 -4.631524e-02
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## 8-357045      7.275869e-03  1.261289e-02
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## 8-357574 4.660679e-04 2.563720e-04
## 8-357592 1.314059e-02 2.485983e-03
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## 8-357658 -3.562001e-02 -3.402263e-02
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## 8-358047 -3.052752e-02 -9.925739e-03
## 8-358083 -3.025801e-02 -2.692951e-02
## 8-358085 -2.782318e-03 -4.748744e-03
## 8-358087 -7.680057e-04 -1.249583e-03
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## 8-358304 -3.030116e-03 1.713436e-03
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## 8-358790 1.168008e-02 2.051650e-02
## 8-358800 -3.534247e-02 -1.816277e-02
## 8-358929 7.686862e-03 1.253672e-02
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## 8-359258 -4.135360e-02 -1.130674e-02
## 8-359266 -1.949068e-02 -2.358001e-03
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## 8-359472      3.484254e-02  -5.505082e-03
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## 8-359594      -2.234488e-03  3.172355e-02
## 8-359613      1.479475e-02  1.733725e-03
## 8-359641      -6.761150e-02  -1.267660e-02
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## 8-361837      4.726045e-03  1.069711e-02
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## 8-362121      -2.377930e-02  -3.352697e-03
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## 8-363193      1.482202e-02  3.486483e-02
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## 8-363249     -7.618463e-03  2.014516e-02
## 8-363307     -1.673856e-02  6.845047e-03
## 8-363333      1.173846e-02  1.826918e-02
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## 8-366769     -4.766430e-02 -4.686809e-02
## 8-366776      1.765740e-02  1.597371e-02
## 8-366779     -2.550060e-02 -7.233283e-03
## 8-366852      6.175764e-03 -7.999829e-03
## 8-366888     -9.870495e-03  2.480675e-03
## 8-366901     -1.326724e-02 -6.483154e-03
## 8-366949     -4.257374e-02 -7.790006e-03
## 8-366954     -4.257374e-02 -7.790006e-03
## 8-366958      5.457345e-03  1.524325e-02
## 8-366979      4.231547e-03  1.463851e-02
## 8-367091      1.042781e-01  9.507001e-03

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## 8-367217     -2.939803e-02  1.189175e-02
## 8-367359      1.130652e-02  2.966417e-03
## 8-367470     -4.580690e-03  -5.275505e-03
## 8-367491     -8.920579e-03  1.429438e-03
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## 8-367580      9.519628e-02  -3.216322e-02
## 8-367627     -1.701257e-02  2.116982e-02
## 8-367642     -2.269116e-02  2.002989e-02
## 8-367724      4.342007e-02  -1.698253e-02
## 8-367811     -2.905475e-02  9.922786e-02
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## 8-367961     -8.048673e-03  -4.297354e-03
## 8-367986     -5.207686e-03  -5.295496e-03
## 8-367995     -2.225585e-02  -1.501618e-02
## 8-368032      1.774950e-02  6.372921e-03
## 8-368033      2.871301e-03  -5.663108e-03
## 8-368042     -3.066305e-02  -1.493471e-02
## 8-368078     -3.336761e-03  3.587247e-04
## 8-368167      1.027977e-02  -7.310962e-03
## 8-368243      1.085685e-02  2.797123e-02
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## 8-368274     -2.387238e-02  -1.709746e-02
## 8-368300     -1.273153e-03  -8.924365e-03
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## 8-368333     -2.277472e-02  -1.088116e-02
## 8-368413      9.678980e-03  -2.588808e-03
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## 8-368577     -2.211662e-02  1.996369e-02
## 8-368583      5.163349e-03  6.512240e-03
## 8-368617     -3.074476e-02  9.678223e-02
## 8-368650     -8.387824e-03  1.269095e-03
## 8-368744     -1.028509e-02  -1.555321e-03
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## 8-368763     -2.352169e-03  -8.103366e-03
## 8-368803     -6.891700e-03  -3.377045e-03
## 8-368869      8.059766e-03  1.036791e-03
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## 8-369122      2.022978e-02  4.015395e-02
## 8-369129     -9.441390e-04  1.044441e-02
## 8-369130      8.636592e-03  5.489653e-03
## 8-369141     -7.946884e-03  -4.936823e-03
## 8-369320      7.064430e-03  1.291782e-03
## 8-369402      7.500743e-03  6.649762e-04

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## 8-369497 1.916689e-03 -6.035217e-03
## 8-369553 4.199370e-03 1.848304e-02
## 8-369602 -1.370225e-02 1.745297e-02
## 8-369673 -1.300000e-02 -4.708480e-03
## 8-369685 -7.262853e-03 -1.545841e-02
## 8-369693 2.861787e-03 5.523232e-03
## 8-369721 -1.686766e-02 2.564902e-02
## 8-369740 8.537049e-03 -1.700840e-03
## 8-369778 2.173182e-02 5.526875e-03
## 8-369781 -2.736638e-02 -1.037549e-02
## 8-369792 -8.648595e-03 -1.420673e-02
## 8-369806 2.355460e-03 -8.740685e-03
## 8-369860 1.365389e-02 6.484008e-03
## 8-369874 6.703560e-03 1.073088e-02
## 8-369916 2.355460e-03 -8.740685e-03
## 8-369932 -2.358512e-02 2.297355e-02
## 8-370009 -6.247618e-03 -1.206695e-02
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## 8-370065 1.179516e-02 2.356851e-02
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## 8-370124 -1.200843e-03 3.291998e-03
## 8-370150 -7.311766e-03 -9.074928e-03
## 8-370151 -7.311766e-03 -9.074928e-03
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## 8-370317 2.493642e-03 1.161049e-02
## 8-370331 -2.778695e-02 -6.850345e-03
## 8-370355 4.542344e-03 -1.120924e-02
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## 8-370843 1.472369e-03 3.479849e-03
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## 8-371136 -2.453332e-03 -1.417230e-02
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## 8-371461 -1.578116e-02 -1.272506e-02
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## 8-371484 1.691332e-02 4.072454e-02
## 8-371502 -1.355640e-03 1.840919e-02
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## 8-371868 7.102041e-04 1.861810e-03
## 8-371877 -1.169020e-03 1.834460e-02
## 8-371892 -2.167226e-03 -2.342756e-03
## 8-371913 -8.967444e-03 -6.796140e-03
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## 8-372323 1.476888e-02 4.808450e-03
## 8-372337 -1.968136e-02 -2.133435e-02
## 8-372396 -1.079951e-02 -3.308610e-02
## 8-372427 -1.408223e-02 -4.096185e-02
## 8-372453 7.102041e-04 1.861810e-03
## 8-372512 3.075563e-03 1.112051e-02
## 8-372525 1.024621e-01 -6.988641e-02
## 8-372588 -1.422700e-01 -1.735573e-02
## 8-372631 1.087919e-02 4.124124e-03
## 8-372639 7.867521e-03 -5.864817e-04
## 8-372699 6.373087e-03 -5.579392e-03
## 8-372719 3.075563e-03 1.112051e-02
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## 8-373060 -2.136684e-02 -5.073197e-03
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## 8-373437 1.036040e-02 -4.271062e-03
## 8-373456 -1.086451e-02 2.624451e-02
## 8-373468 -3.201545e-02 -1.224591e-02
## 8-373479 -6.758062e-03 -2.698490e-03
## 8-373541 -1.433202e-03 1.654937e-03
## 8-373591 -1.961671e-02 -2.202659e-02
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## 8-373651 1.086594e-02 -4.082262e-03
## 8-373761 2.521497e-02 4.883012e-02
## 8-373795 3.211717e-03 -3.965434e-02
## 8-373874 3.339885e-02 -1.089383e-02
## 8-373878 -5.277241e-02 -6.559992e-02
## 8-373948 3.817622e-02 -1.327922e-02
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## 8-374173      4.560566e-03 -7.167402e-03
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## 8-374266      -1.401084e-02 -5.292080e-02
## 8-374279      -3.059450e-03 -7.891757e-03
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## 8-374555      1.260781e-02  3.224217e-02
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## 8-374613      -2.892779e-02  1.200297e-02
## 8-374627      1.427494e-02  3.166734e-02
## 8-374668      6.664574e-02 -3.876785e-02
## 8-374747      6.092653e-03  1.862087e-03
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## 8-374955      1.442647e-02  3.087511e-03
## 8-375101      1.074983e-03  4.598579e-03
## 8-375112      -7.898439e-03 -1.085199e-02
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## 8-375230      4.604110e-02 -1.605380e-02
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## 8-375258      4.778862e-03 -1.392934e-03
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## 8-375293      4.043932e-02 -3.697526e-02
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## 8-375613      -7.033735e-03 -4.514697e-03
## 8-375622      -1.909126e-02 -1.116038e-02
## 8-375638      -2.278483e-02 -2.158078e-02
## 8-375656      4.880595e-03 -2.999421e-03
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## 8-375705      -3.291954e-02  1.848390e-02
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## 8-375860      -1.730941e-02  1.022763e-02
## 8-375867      1.467496e-02  5.185017e-03
## 8-375950      2.520160e-02  7.052970e-03
## 8-375978      4.678793e-03  3.479609e-04
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## 8-376079      -1.697412e-03 -7.200149e-02
## 8-376089      9.708757e-03  4.329480e-03
## 8-376094      1.623590e-03  9.971783e-03
## 8-376106      -2.349645e-02 -2.421181e-03
## 8-376145      -1.446504e-02  2.126774e-02
## 8-376178      -2.885890e-03 -2.117867e-02
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## 8-377433      3.484217e-03  9.188451e-03
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## 8-377795      -3.233908e-02 -4.241794e-02
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## 8-379062      5.177128e-03 -1.084237e-02
## 8-379065      -8.494192e-03  5.611563e-02
## 8-379088      5.006025e-03 -1.264742e-02
## 8-379104      -6.434022e-05 -6.066388e-03
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## 8-379141      -2.451688e-02  1.186879e-02
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## 8-379757      -2.202725e-02 -4.263257e-03
## 8-379781      8.503988e-04 -2.072918e-02
## 8-379826      -1.569776e-02 -1.204439e-02
## 8-379838      -1.041202e-02  8.532882e-03
## 8-379910      -1.693405e-02  2.201633e-02
## 8-379947      7.474441e-03 -3.872346e-03
## 8-379949      -7.250345e-03 -8.149931e-02
## 8-380009      -8.058748e-03 -5.863989e-02
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## 8-380053      1.267585e-02  2.201593e-02

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## 8-380088 -3.303877e-02 -1.206127e-01
## 8-380098 -4.780952e-02 -6.512816e-02
## 8-380152 -3.449317e-02 -2.104703e-02
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## 8-381068 1.131042e-02 4.166951e-03
## 8-381193 1.098590e-04 -1.005852e-02
## 8-381205 -2.451688e-02 1.186879e-02
## 8-381239 2.823973e-02 -9.969075e-03
## 8-381277 6.296433e-02 -4.915932e-02
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## 8-381374 2.751802e-02 -9.851880e-03
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## 8-381548 -1.535584e-02 4.281396e-02
## 8-381739 -3.329320e-02 -5.572727e-03
## 8-381924 -2.134978e-02 -2.964714e-02
## 8-381965 -6.031158e-03 1.750770e-02
## 8-381968 4.169877e-04 -1.115824e-02
## 8-381973 -2.893931e-03 5.507467e-03
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## 8-382158 2.766157e-02 8.957771e-03
## 8-382234 -2.208929e-03 -1.597612e-02
## 8-382245 1.431158e-02 2.263469e-03
## 8-382279 2.823973e-02 -9.969075e-03
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## 8-382386 -6.233862e-03 1.120355e-02
## 8-382451 2.159539e-02 4.087800e-02
## 8-382520 -1.815323e-02 4.899708e-03
## 8-382524 1.025211e-02 3.469601e-03
## 8-382535 1.313047e-02 1.711669e-03
## 8-382576 2.321814e-02 5.019040e-02

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## 8-383286      8.721304e-02  -2.021797e-02
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## 8-386032 4.579114e-02 -1.656703e-02
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## 8-388591 -2.078147e-02  9.958906e-03
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## 8-392636     -7.973122e-03  -3.035074e-02
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## 8-392649      1.641765e-02  6.938667e-03
## 8-392669      6.546331e-03  3.561542e-02
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## 8-392952     -4.901618e-03  -3.597321e-02
## 8-392988      4.595994e-02  -1.617618e-02
## 8-393005     -1.411774e-02  1.366078e-02
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## 8-393096     -2.492337e-02  -1.307778e-02
## 8-393096_2   -2.851508e-02  -3.290849e-02
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## 8-393167      3.361475e-03  -4.120735e-03
## 8-393252     -4.302388e-03  -2.284402e-02
## 8-393263      4.238726e-02  -1.693118e-02
## 8-393309     -1.665819e-02  -4.514859e-03
## 8-393314      4.283555e-02  -5.305688e-02
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## 8-393340      9.667697e-03  1.989030e-02

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## 8-393513      -2.224885e-02  1.553979e-02
## 8-393528      2.107668e-02  7.611904e-03
## 8-393533      9.622082e-03 -4.237530e-03
## 8-393580      2.586677e-03 -2.350125e-03
## 8-393602      -1.172922e-01 -7.861834e-02
## 8-393651      -2.273682e-02  1.438337e-02
## 8-393678      -9.526237e-03  9.084011e-02
## 8-393701      -1.482660e-02 -3.424452e-02
## 8-393721      7.000580e-02 -1.824411e-02
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## 8-393775      7.320616e-04  6.035509e-03
## 8-393887      -2.373732e-02  1.147738e-02
## 8-393892      2.060737e-04 -7.283433e-03
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## 8-394137      -5.590947e-03  9.575829e-03
## 8-394193      1.638715e-02  5.158625e-03
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## 8-394330      1.655009e-02 -6.391543e-03
## 8-394363      -1.551574e-02 -1.837829e-03
## 8-394459      -1.358732e-02 -1.047907e-02
## 8-394487      1.551414e-02 -9.190749e-03
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## 8-394554      3.102753e-02  5.899838e-02
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## 8-394580      -4.386385e-03 -9.820973e-03
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## 8-394624      -5.002330e-02 -4.484867e-02
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## 8-394645      4.501697e-02 -3.517137e-02
## 8-394697      1.761508e-03 -2.305898e-02
## 8-394746      2.561642e-02 -8.365909e-03
## 8-394767      3.014724e-03  5.730895e-03
## 8-394843      -8.863338e-03 -5.167268e-03
## 8-395079      -1.127007e-02 -8.911118e-03
## 8-395117      6.403049e-02 -4.532253e-02
## 8-395130      6.403049e-02 -4.532253e-02
## 8-395225      1.266494e-02  6.393650e-03
## 8-395231      -2.097494e-02  2.401965e-03
## 8-395450      6.403049e-02 -4.532253e-02
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## 8-395506      1.951257e-03  9.242475e-03
## 8-395544      4.979300e-04 -1.840991e-02
## 8-395729      -2.729048e-02  2.793529e-03
## 8-395836      8.549604e-03  3.187330e-03
## 8-395842      2.079744e-02 -8.905068e-03

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## 8-396141    2.128106e-02  -1.197293e-02
## 8-396234    1.244916e-02  -3.726753e-05
## 8-396349   -4.154944e-03  -8.358870e-03
## 8-396371    2.748913e-03  -3.682688e-03
## 8-396392   -1.668645e-02  3.431119e-02
## 8-396422   -2.465661e-02  1.260408e-02
## 8-396422_2 -2.080257e-02  4.637195e-02
## 8-396446    5.937419e-03  2.114684e-02
## 8-396453   -1.558635e-02  6.453550e-03
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## 8-396593    2.013900e-02  -1.189504e-02
## 8-396612   -1.490174e-02  -2.409407e-03
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## 8-397387   -2.884987e-02  2.608498e-02
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## 8-397615   -6.577645e-03  -2.758515e-02
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## 8-398053    1.939789e-02  -1.027242e-02
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## 8-398304 -1.792066e-02 1.810080e-02
## 8-398345 -4.080627e-03 1.321179e-03
## 8-398373 -1.410682e-02 4.714314e-03
## 8-398427 -1.140365e-02 -4.996816e-02
## 8-398441 -8.374964e-03 -2.041125e-02
## 8-398468 -2.582494e-02 8.332042e-02
## 8-398524 7.408379e-02 -2.807317e-02
## 8-398527 1.088904e-02 2.746544e-02
## 8-398537 1.437521e-02 -1.174873e-02
## 8-398623 1.630977e-02 1.364088e-02
## 8-398678 -1.208483e-02 2.643025e-03
## 8-398755 1.625642e-02 4.394811e-03
## 8-398785 -5.550277e-03 -9.648173e-03
## 8-398797 4.527627e-04 -2.353627e-03
## 8-398813 -6.826818e-03 -1.645032e-02
## 8-398813_2 -5.595512e-04 7.628459e-03
## 8-398838 -1.396645e-03 -4.619373e-02
## 8-399106 -1.586546e-02 -4.276785e-04
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## 8-399231 1.401513e-02 -1.014196e-02
## 8-399266 1.841282e-02 -9.628182e-03
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## 8-399567 -3.265848e-02 4.187616e-02
## 8-399591 6.192281e-03 5.283290e-03
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## 8-399913 1.635609e-02 3.635531e-02
## 8-399953 -3.780981e-04 -5.659548e-02
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## 9-400108 -2.026133e-03 1.305542e-03
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## 9-400262 -5.286342e-03 2.964492e-03
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## 9-400372 -3.165209e-04 3.608340e-02
## 9-400379 -1.953819e-02 -5.250404e-02
## 9-400394 -3.418338e-02 -4.918387e-03
## 9-400402 3.324474e-02 -1.188038e-02
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## 9-400627      3.698533e-03 -1.539781e-02
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## 9-400813      -1.434876e-03 -1.748146e-02
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## 9-400978      -5.310561e-03  7.280579e-03
## 9-400999      -8.994553e-03  1.374348e-03
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## 9-401091      -2.523821e-03 -8.968556e-03
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## 9-401845      -1.353291e-02 -1.356058e-02
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## 9-402539      -2.337367e-03  3.541279e-02
## 9-402640      -9.029481e-03  2.771990e-02
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## 9-403147 9.595955e-03 -2.367031e-02
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## 9-403178 1.018686e-01 -3.310832e-02
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## 9-403246 -2.471378e-03 4.718323e-03
## 9-403260 -1.712895e-02 1.088058e-01
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## 9-403290 2.198364e-02 -3.308444e-03
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## 9-403484 -1.037239e-02 6.789552e-02
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## 9-405938      4.084832e-03  -4.565536e-03
## 9-405959      1.206891e-02  2.413372e-03
## 9-405977     -2.580638e-02  -2.742817e-02
## 9-405987      1.347288e-02  2.168830e-03
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## 9-406118     -1.722808e-02  6.562870e-02
## 9-406141      6.502393e-03  -9.969768e-03
## 9-406157      4.191569e-03  -4.787439e-03
## 9-406252     -1.750193e-02  -1.615219e-02

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## 9-406325      1.616032e-03 -2.081063e-02
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## 9-406472     -1.869485e-02 -1.732855e-02
## 9-406579      4.709131e-02 -1.512524e-02
## 9-406652      1.273543e-02  4.239494e-03
## 9-406898     -1.420893e-03 -4.347836e-03
## 9-406903     -2.500920e-02  1.794466e-03
## 9-406923      1.125057e-02  1.313511e-02
## 9-406937     -8.836442e-03 -1.019035e-02
## 9-407020     -3.707388e-03 -4.787217e-03
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## 9-407170      9.297158e-03 -5.051343e-03
## 9-407238     -1.667496e-02  1.358948e-02
## 9-407245     -3.262645e-02  1.035271e-02
## 9-407249     -2.075367e-02  1.593109e-02
## 9-407262     -4.845118e-03  5.904672e-03
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## 9-407362      1.741589e-04  1.352136e-02
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## 9-407381      2.990765e-02 -1.444193e-02
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## 9-407439     -8.836442e-03 -1.019035e-02
## 9-407569     -2.977176e-03  1.048634e-02
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## 9-407666     -1.267360e-03 -4.371281e-03
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## 9-408226     -2.365666e-02  1.414335e-02
## 9-408251      1.917377e-02  1.604228e-02
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## 9-408324      1.439321e-02 -1.148457e-02
## 9-408359     -3.543591e-03  4.271023e-02
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## 9-408444      9.797490e-04 -1.649785e-03
## 9-408461      1.223443e-01 -4.361996e-02
## 9-408652     -3.308087e-02 -1.121331e-02
## 9-408725     -9.861505e-03  4.720801e-03
## 9-408772     -1.720299e-02 -8.738098e-03
## 9-408776      4.024906e-03 -1.810254e-02

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## 9-408970      -7.591366e-02 -1.620250e-02
## 9-408993      -3.767039e-03 1.531244e-02
## 9-408998      -4.053794e-03 4.455732e-02
## 9-409015      -8.657921e-04 3.543300e-03
## 9-409062      6.136926e-05 1.101173e-02
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## 9-409084      -7.310382e-03 -5.761387e-04
## 9-409148      -9.372858e-04 -8.898674e-03
## 9-409220      -1.181055e-02 8.917588e-03
## 9-409238      -1.025381e-03 3.606488e-03
## 9-409314      -2.836769e-02 2.322747e-02
## 9-409320      1.853344e-02 6.882617e-03
## 9-409336      7.536845e-04 9.044147e-03
## 9-409341      7.536845e-04 9.044147e-03
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## 9-409430      -3.165661e-02 -1.177689e-02
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## 9-409497      7.609653e-02 6.998845e-04
## 9-409517      -1.089421e-02 -1.525149e-03
## 9-409607      4.698511e-02 -1.944498e-02
## 9-409716      -3.100094e-02 -1.113933e-02
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## 9-411001 -6.022797e-03 2.167494e-02
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## 9-411127 2.391203e-02 8.220029e-03
## 9-411137 5.859287e-04 -1.145331e-03
## 9-411152 -1.594707e-02 3.489191e-03
## 9-411158 1.418881e-03 -1.816965e-02
## 9-411188 4.488760e-03 -1.043753e-02
## 9-411197 4.726083e-03 6.250085e-03
## 9-411239 -1.077029e-02 2.259018e-02
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## 9-411307 8.578148e-03 1.032538e-02
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## 9-411665 2.059697e-04 -2.668783e-03
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## 9-415358      2.353978e-02  1.901627e-02
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## 9-418662      -4.652204e-02  -3.560752e-02
## 9-418673      1.707348e-02  3.368197e-03
## 9-418715      -2.263793e-02  -3.149707e-03
## 9-418728      -4.024040e-02  -2.647279e-03
## 9-418786      -9.904253e-03  5.973976e-03
## 9-418786_2   -9.904253e-03  5.973976e-03
## 9-418792      -2.392961e-02  -8.428230e-04
## 9-418869      -4.728141e-05  -1.958168e-03
## 9-418926      3.744549e-02  -4.776092e-02
## 9-418976      6.119073e-03  -1.675187e-02
## 9-419042      -9.395484e-03  3.368234e-02

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## 9-419050      3.809852e-02 -3.757042e-02
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## 9-419203     -3.547447e-02 -4.283797e-02
## 9-419428     -1.579876e-02 -1.146037e-02
## 9-419478     -7.188041e-03 -6.024972e-03
## 9-419523      3.734805e-03  4.746175e-04
## 9-419564     -6.945281e-02 -7.295495e-02
## 9-419631     -2.540800e-02 -1.149972e-02
## 9-419661     -2.468055e-02 -2.583242e-02
## 9-419693      4.774189e-02 -3.968022e-02
## 9-419798     -7.569127e-03  2.868897e-02
## 9-419859     -2.610588e-02  5.229607e-03
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## 9-419991     -7.569127e-03  2.868897e-02
## 9-420036     -2.071432e-02  1.879255e-02
## 9-420106      7.056460e-03 -7.244232e-03
## 9-420112      4.164142e-02 -3.362477e-02
## 9-420142      1.139924e-02  4.382826e-03
## 9-420206      1.020609e-02 -2.203107e-03
## 9-420206_2   -3.118084e-03 -1.656533e-02
## 9-420264     -3.440323e-02 -9.956837e-03
## 9-420269      1.444829e-03 -3.440970e-03
## 9-420312      5.773188e-04 -5.707571e-04
## 9-420343      2.017888e-02  7.568066e-03
## 9-420357      1.208016e-01 -4.127159e-02
## 9-420417      9.970505e-03  1.268201e-02
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## 9-420460      1.592580e-02  3.561517e-02
## 9-420524      1.787364e-02  1.100926e-02
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## 9-420740      7.116737e-03 -7.220726e-03
## 9-420752     -2.743942e-02  3.340695e-02
## 9-420769     -3.606556e-02 -5.260102e-02
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## 9-421147      7.312312e-03  6.923335e-03
## 9-421165      5.773188e-04 -5.707571e-04
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## 9-421247     -2.791477e-03 -1.594339e-02
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## 9-421404 -2.550531e-02 -6.613892e-03
## 9-421420 7.244430e-03 6.445817e-03
## 9-421466 6.183697e-04 -4.205191e-03
## 9-421476 9.974416e-03 2.575036e-02
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## 9-421498 -3.433013e-02 9.452835e-02
## 9-421505 5.567185e-04 -1.223657e-03
## 9-421515 -7.635540e-03 -1.596155e-02
## 9-421560 4.332804e-02 -5.840924e-03
## 9-421563 1.326478e-02 -4.638917e-03
## 9-421592 -1.826403e-02 -8.695837e-04
## 9-421600 1.866573e-02 3.919454e-02
## 9-421664 1.080703e-02 2.098711e-02
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## 9-421852 7.312312e-03 6.923335e-03
## 9-421878 1.305448e-02 -5.152166e-03
## 9-421945 1.018443e-03 -5.923786e-03
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## 9-422230 -2.611341e-02 -4.628805e-03
## 9-422244 -3.059243e-03 -3.574395e-02
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## 9-422432 -4.998046e-02 -1.061336e-02
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## 9-422558 1.618366e-02 4.856690e-02
## 9-422600 2.470523e-02 3.716601e-02
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## 9-422698 -3.301544e-02 -3.673403e-02
## 9-422699 -3.162638e-03 -3.779163e-02
## 9-422754 1.376905e-03 2.652761e-03
## 9-422880 4.512476e-02 -6.694821e-03
## 9-422909 2.265706e-02 6.626147e-03
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## 9-422962 -1.891798e-02 1.981284e-02
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## 9-423112 5.840203e-04 4.796842e-03
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## 9-423487      -5.638137e-03  -1.217019e-02
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## 9-423522      -1.348911e-02  4.807714e-02
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## 9-423670      1.072001e-03  -1.895082e-03
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## 9-423761      -1.301540e-02  4.255926e-02
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## 9-424130      1.300476e-02  1.422811e-02
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## 9-424177      1.987564e-03  -1.368528e-02
## 9-424199      -1.969394e-02  2.032250e-02
## 9-424257      -3.208536e-02  -2.385986e-02
## 9-424295      2.893566e-03  1.660935e-02
## 9-424306      -1.363246e-03  -1.864872e-02
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## 9-424634      -4.714800e-02  3.143109e-02
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## 9-425330     -3.796167e-02  1.762869e-02
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## 9-425416     -1.309487e-02 -5.101111e-02
## 9-425437      1.718581e-02  3.133367e-03
## 9-425446     -1.442450e-02  6.762580e-06
## 9-425488      4.164142e-02 -3.362477e-02
## 9-425564      2.841534e-02  1.987783e-02
## 9-425580     -1.575249e-02 -6.519584e-03
## 9-425607      5.099366e-03 -5.216013e-03
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## 9-425689     -1.048841e-02  7.412108e-03
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## 9-425826     -1.033658e-02  2.521809e-02
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## 9-426876     -1.027906e-02 -1.154030e-02
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## 9-427125     -2.612165e-02 -2.769874e-02
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## 9-427250 -1.125838e-02 -1.055278e-02
## 9-427370 -3.231142e-03 -8.304713e-03
## 9-427443 -2.612696e-02 2.363822e-02
## 9-427576 4.247612e-03 1.082464e-02
## 9-427637 -1.046742e-02 -3.513544e-02
## 9-427666 -2.141839e-02 2.065474e-02
## 9-427701 4.719181e-02 -1.901653e-02
## 9-427751 8.913003e-02 -2.851750e-04
## 9-427760 -1.219360e-01 -1.251162e-01
## 9-427864 8.913003e-02 -2.851750e-04
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## 9-427927 -5.744659e-03 1.612509e-03
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## 9-427978 7.201842e-03 4.065941e-03
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## 9-428240 -9.812470e-03 -3.800568e-02
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## 9-428807 1.988807e-03 -2.028558e-03
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## 9-429528 -1.894861e-04 8.226117e-03
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## 9-430522 -8.810917e-03 -9.619007e-03
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## 9-430996 3.961559e-02 -5.066588e-03
## 9-431022 -2.544438e-03 -4.948724e-03
## 9-431079 -1.583669e-03 -4.100996e-03
## 9-431105 -1.324643e-02 3.726004e-02
## 9-431112 1.090583e-03 2.200999e-03
## 9-431151 1.090583e-03 2.200999e-03
## 9-431155 1.660092e-02 1.056616e-02
## 9-431159 9.295345e-04 -1.072710e-03

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## 9-431280      8.784959e-02 -2.006538e-02
## 9-431283      1.547178e-02  4.467315e-03
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## 9-431491     -1.249383e-02  2.694541e-02
## 9-431496     -1.888538e-03 -5.068325e-03
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## 9-432945 -2.123699e-02 8.795151e-03
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## 9-438347 1.537292e-02 -8.416593e-03
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## 9-440256 -1.499239e-02 3.234659e-02
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## 9-440625     -1.621568e-02  3.237307e-02
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## 9-440798     -2.531405e-02 -1.847369e-02
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## 9-441803     -2.342621e-02 -1.258530e-03
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## 9-443096    1.548060e-02 -1.233769e-03
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## 9-444115   -8.162342e-03 -1.472120e-02
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## 10-493547    6.700054e-04  1.055588e-02
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## 10-493630    8.425768e-02  1.003536e-03
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## 10-493713    6.015268e-03  1.969410e-02
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## 10-493883    -2.214780e-02  -3.223591e-03
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## 10-493938    2.904999e-02  9.744747e-03
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## 10-494051    1.757061e-02  6.916840e-03
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## 10-494339 -2.639994e-03 -1.658653e-02
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## 10-494363 -2.681926e-03 -1.666510e-02
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## 10-494436 -1.989694e-02 2.013731e-03
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## 11-531356  -4.203249e-03 -8.831857e-03
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## 11-531454  -4.528975e-04  5.982374e-02

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## 11-531580 7.301182e-03 -1.336667e-02
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## 11-543418  -4.632003e-02 -8.127895e-03
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## 11-543619  -2.973026e-02 -2.071919e-02
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## 11-544662  -3.084331e-03 -2.345147e-02
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## 11-544950  -3.332367e-02  1.010476e-03
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## 12-587089   -6.831040e-03  -8.896924e-03
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## 13-607760 4.368546e-04 1.199251e-02
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## 13-618930  4.716828e-02  -1.654778e-02
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## 13-630234 -1.151417e-02 -4.889833e-03
## 13-630254 -1.300910e-02 5.982553e-04
## 13-630268 8.272897e-04 -5.135939e-03
## 13-630289 -2.810117e-03 -1.216924e-02
## 13-630311 -9.033691e-03 1.266935e-02
## 13-630323 1.153242e-02 -2.546278e-04
## 13-630354 1.435702e-02 -9.819163e-04

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## 13-630493  4.574283e-02  -1.644371e-02
## 13-630501  -2.124407e-02  1.400039e-02
## 13-630505  -4.735228e-03  -2.542719e-02
## 13-630526  1.086689e-03  3.068467e-02
## 13-630540  -1.285065e-02  -5.078034e-04
## 13-630544  -1.701552e-02  1.336101e-03
## 13-630589  5.488878e-03  6.716511e-04
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## 13-630806  1.300001e-02  3.088001e-03
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## 13-631045  -2.121955e-02  -9.671900e-03
## 13-631048  4.574283e-02  -1.644371e-02
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## 13-631130  4.574283e-02  -1.644371e-02
## 13-631158  1.446102e-02  6.893828e-03
## 13-631223  -7.318033e-02  -1.735407e-02
## 13-631251  -2.357053e-02  2.467286e-02
## 13-631259  1.380820e-02  1.907234e-02
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## 13-631395  1.927206e-02  2.244551e-03
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## 13-631429  -2.988728e-03  4.743662e-05
## 13-631454  1.920223e-03  1.233859e-02
## 13-631512  -5.292754e-03  -4.993074e-03
## 13-631662  8.735672e-04  4.082682e-02
## 13-631782  -2.374358e-02  3.666583e-02
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## 13-632023  8.360376e-03  6.606000e-03
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## 13-632054  1.447821e-03  -4.032315e-03
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## 13-632125  1.198794e-02  -8.031622e-04
## 13-632158  1.126581e-02  4.546964e-03
## 13-632174  -7.148979e-03  8.295235e-03

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## 13-632190 -2.670539e-02 -9.923783e-03
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## 13-632273 -2.670413e-02 -6.957125e-04
## 13-632285 1.129250e-02 5.211450e-03
## 13-632326 5.074086e-02 -4.553807e-02
## 13-632356 1.923963e-02 6.878901e-03
## 13-632373 -2.594062e-03 -1.520257e-02
## 13-632383 6.598090e-03 -1.680005e-02
## 13-632613 4.649218e-02 -4.981296e-02
## 13-632627 4.739719e-02 -3.108684e-02
## 13-632634 -1.630941e-02 6.635538e-02
## 13-632746 -1.106798e-02 1.889749e-03
## 13-632785 3.276822e-02 1.918939e-02
## 13-632785_2 3.213946e-02 -1.677768e-02
## 13-632799 3.459784e-03 -6.971016e-04
## 13-632803 4.574283e-02 -1.644371e-02
## 13-632820 1.090455e-02 5.319850e-03
## 13-632850 -1.086464e-02 4.501032e-02
## 13-632859 -1.490416e-03 7.763342e-03
## 13-632877 -1.041388e-02 -4.122598e-02
## 13-632889 1.173994e-02 6.130747e-03
## 13-632962 1.842491e-02 1.617312e-02
## 13-632986 -4.781284e-03 1.918782e-03
## 13-633062 1.009131e-02 2.047616e-03
## 13-633075 3.288812e-02 -2.876261e-02
## 13-633146 1.266291e-02 2.938524e-02
## 13-633161 2.193516e-02 8.095128e-03
## 13-633198 3.627338e-03 2.618718e-03
## 13-633222 7.013050e-03 -2.126943e-03
## 13-633374 1.062834e-02 6.112975e-03
## 13-633382 4.104590e-02 5.207699e-02
## 13-633411 1.258446e-02 -5.932632e-04
## 13-633421 2.691649e-02 -4.567387e-02
## 13-633439 -8.331440e-02 3.517743e-04
## 13-633479 -3.098347e-02 -3.823395e-02
## 13-633544 -2.247372e-02 2.862015e-02
## 13-633592 2.031321e-03 -2.162994e-03
## 13-633648 1.980444e-02 6.677524e-03
## 13-633666 2.358355e-03 -2.949179e-03
## 13-633711 3.776483e-03 7.938407e-03
## 13-633771 2.647952e-02 -6.456904e-03
## 13-633812 -1.446584e-02 -4.426316e-02
## 13-633897 -1.001609e-02 -7.041911e-03
## 13-633908 -3.996112e-02 -1.051658e-02
## 13-633932 -1.771507e-03 1.847398e-03
## 13-633979 -1.490859e-02 1.539784e-02
## 13-634000 -3.887640e-02 -1.209569e-02
## 13-634061 -2.755480e-03 -1.497074e-02
## 13-634068 -1.233950e-03 2.935341e-03
## 13-634165 -5.462657e-03 -1.904400e-03
## 13-634177 2.358355e-03 -2.949179e-03
## 13-634191 1.211109e-02 -7.613227e-04
## 13-634258 -2.729113e-03 -3.995089e-03
## 13-634259 2.315530e-02 -2.749398e-02

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## 13-634264 7.058425e-03 -1.206112e-02
## 13-634326 1.018326e-02 7.256582e-03
## 13-634427 2.022869e-04 6.065458e-02
## 13-634438 -3.904027e-03 5.961405e-03
## 13-634450 1.882773e-02 3.463647e-02
## 13-634606 -6.121552e-02 -5.493910e-02
## 13-634631 1.236472e-02 4.158537e-03
## 13-634658 1.070367e-02 7.059561e-03
## 13-634769 -3.029298e-02 -3.700935e-02
## 13-634819 -1.978401e-02 2.597726e-02
## 13-634923 -2.727294e-02 -1.240790e-02
## 13-634954 5.834178e-03 1.508514e-02
## 13-635021 8.556495e-03 -2.255419e-02
## 13-635078 -2.370630e-02 -5.090902e-03
## 13-635142 -3.314070e-02 -3.997833e-02
## 13-635185 -8.421753e-03 -9.680403e-03
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## 13-635216 5.803315e-03 2.552103e-03
## 13-635261 1.004087e-02 2.548277e-02
## 13-635313 1.916580e-03 -1.483531e-02
## 13-635324 -5.654088e-05 8.771786e-03
## 13-635376 4.075815e-03 -1.521212e-02
## 13-635411 -9.260916e-03 -5.502412e-03
## 13-635419 -4.457961e-04 3.250214e-03
## [ reached getOption("max.print") -- omitted 9705 rows ]
##
## $sites
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## 34 -0.8643058101 -0.916613040 -0.6236796023 0.428157362 -1.973140139
## 35 -1.1049385533 2.169443588 1.4839046750 0.386991699 1.178208878
## 45 1.8956905553 0.279013669 0.3473426458 -3.350123408 1.738145404
## 46 0.0926183526 -1.908499687 -0.2064069835 0.010687883 0.402323045
## 47 -0.4219394159 -3.165675106 0.1950281794 2.892616423 3.469822051
## 65 -0.4897279971 -2.674304799 -0.4102363620 1.531973851 0.442008667
## 66 -0.0133615916 -1.320640848 1.9251736845 -1.521890966 -1.742268735
## 73 0.1861580594 -1.174328069 0.7788243903 -1.450925372 -0.609019138
## 86 0.9346324809 -1.202897165 0.2663101598 -2.102042525 0.653039228
## 107 -1.3947326501 2.104726228 0.4925586606 0.755148570 -0.239641371
## 120 3.0830513891 0.229857897 -0.4860463273 2.623740300 -2.193094741
## 128 1.5631136464 0.446653987 0.2324339705 -1.820481423 1.577287568
## 133 -0.1449543655 -2.233478843 -0.0762783680 0.832828110 0.835857823
## 165 -0.6105727515 -2.158876735 -1.3520231711 0.995173337 -0.517218580
## 174 -0.5120319860 -1.266462305 1.2366055162 0.729638783 3.672981589
## 176 1.1655283955 -1.141007315 0.3383112783 -3.827887168 -0.367079678
## 195 1.3779394830 -0.924830033 0.4189674478 -3.908929798 -0.203781675
## 199 -0.5754163038 0.504806937 1.4778651452 0.349286766 -0.020122713
## 208 -0.5239183252 -1.340639092 0.5294222413 -0.056574261 -2.288675827
## 216 -1.0705735443 1.362987755 -2.3459343744 -0.073204208 0.588825064
## 217 -0.4219785477 -2.638105994 -0.3100722393 1.509493671 0.461582257
## 222 -0.6434431333 -0.396519784 1.5307912216 0.178178695 -1.356983838
## 225 0.9833026810 -1.149829274 0.4234119752 -3.232127381 -0.326769484
## 231 -0.3706442279 -2.587836777 -0.2348343097 1.437377932 0.537781048
## 237 -0.4874194155 -1.274572430 1.2675347546 0.935834501 4.484445503
## 255 1.8196576012 0.255357025 0.3072726374 -3.095853282 1.837121877

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## 256 -1.1572017578 1.223566427 -2.3918363173 -0.059538097 0.308695755
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## 269 1.0283174543 -1.206357989 0.1682927097 -2.378273175 0.441584519
## 270 -1.0368354467 0.314146990 -2.4986028524 -0.209398655 0.166999712
## 272 -0.4387149128 -3.213707025 0.1589120921 2.853114051 3.201764686
## 281 1.4199860075 0.684197825 -0.1398643210 -0.329484992 0.924087259
## 294 -1.2552049394 2.400765639 1.5020543430 0.223604153 0.707341300
## 307 -0.0262690155 -1.387740659 1.5565897293 -2.198053456 -1.568891405
## 310 2.1360421061 0.276391894 0.1033605126 -1.209136191 1.357963527
## 315 2.0162874829 0.253743226 0.0865173391 -1.502834326 1.360563277
## 339 -1.1768545427 0.926655130 -0.1766424926 0.786669147 -0.842008973
## 349 -1.1477554976 2.186623536 -1.0471203765 0.123170779 0.406484640
## 353 -0.9141569949 1.745234789 1.6365781773 0.570691069 1.171719070
## 360 -1.3308399606 1.892163026 0.4535183909 0.807824860 -0.387883520
## 383 -0.5475515694 0.947373231 1.2042719484 0.133199039 0.668427965
## 386 2.7151360077 0.150698958 -0.1682561163 0.823427830 0.478591303
## 387 1.8403001974 -0.870217135 0.2175795489 -3.370560989 0.357090741
## 398 -0.9975466642 1.205834868 -2.3084572889 -0.107456020 0.772950843
## 405 1.9013958962 -0.827152515 0.1513381713 -3.163308332 0.447619766
## 406 -0.6424356341 -1.066286340 1.3535525577 0.207429532 -2.331366883
## 413 -0.9707851791 -1.149739214 -0.5520731706 0.691408539 -2.368073293
## 424 -0.7800941402 -1.242256342 0.4052133512 0.623904074 -2.749128466
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## 453 0.4585367173 -0.536236811 1.2818262364 -1.304631881 -0.476659466
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## 470 -1.2725271871 2.052532923 -1.9887333472 -0.025338380 0.429042637
## 480 -1.1943749567 0.941875083 -0.1601147540 0.805914714 -0.900560471
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## 503 -1.2202453661 0.853148679 0.9354684524 1.385004221 -1.166382694
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## 531 -1.3909008505 2.374656087 -0.0226254759 0.445964094 -0.074438985
## 532 -1.4408516050 2.762741336 0.6909779508 0.800193379 0.521468334
## 538 -1.3166605994 1.592383022 -2.1580140959 0.080861956 0.015487474
## 555 -1.0475484465 -0.198095780 -0.0295928282 0.775212026 -2.001741826
## 570 -0.6866219352 1.717631581 1.3426661146 0.218262978 1.414990091
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## 574 -0.5113175161 -2.335659440 -0.6849265985 1.363930073 0.505981780
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## 608 -1.1706051577 -0.466131802 -3.4013895413 -0.346533871 -0.365319180
## 630 -1.3883456385 2.395545845 -0.5740558950 0.199019839 -0.076538508
## 642 -0.4216368168 -1.123040365 1.4597642219 -0.198368617 -2.292672848
## 645 -0.6669137263 -1.260600555 -0.4260902723 0.075585775 -1.872224941
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## 679	-0.7157719321	-0.339822618	1.6527656868	0.263257275	-1.688295146
## 682	-1.2301153497	2.445049084	1.1366956207	0.262292190	0.700887678
## 689	-1.1502773076	2.142616678	1.4898734231	0.512088266	1.063335184
## 693	-0.2489808401	-2.401059081	-0.1374302838	1.069337833	0.760710380
## 696	-0.4847447340	-2.336469670	-0.7797580931	0.992345939	-0.005503454
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## 816	-1.0999035170	1.612656379	-2.2185316762	-0.061892593	0.763966034
## 817	-1.1968057517	-0.367739071	-3.4078393206	-0.289050265	-0.305357903
## 846	-1.3635938139	2.248673252	0.7787714158	0.556354852	0.018734007
## 856	-0.0873216736	-2.166828341	-0.0069311932	0.628156636	0.762605567
## 858	-0.4785631878	-3.072829351	0.1645018486	2.805814420	3.318392234
## 862	0.3353128667	-1.237289084	1.2153022013	-2.052056889	-1.554314792
## 875	-1.2531186414	2.413266330	1.5207062633	0.266622493	0.791123807
## 886	-0.1644023098	-1.371401795	1.7489210961	-1.097148000	-2.185623180
## 887	-0.2099000644	-1.331911832	1.7320672366	-1.027724853	-2.177650826
## 892	-0.4413961783	-3.379074332	0.2541333413	3.166697180	3.713360791
## 898	-0.6121332806	-2.283156857	-1.0310298189	1.229016575	-0.232220927
## 902	-1.4504998901	2.706068465	0.8296937524	0.455743140	0.154427685
## 908	0.0022364893	-1.511849768	2.1091068226	-1.683939439	-2.083210301
## 912	-0.2488636010	-2.405775769	-0.1110651452	1.093770108	0.982809753
## 916	0.3357761818	-1.084222202	1.4785721387	-1.654077158	-1.104576228
## 926	-0.5320560963	-1.374316960	0.5806509010	-0.083979079	-2.299712293
## 936	-0.5186100900	-1.288762210	1.2391818239	0.991535853	4.464786267
## 947	-0.7780997899	-1.399343952	1.1998432912	0.187125912	-3.271348033
## 958	2.8121384559	0.383783714	-0.3971223084	2.662761650	-0.253293254
## 981	-0.4359394499	-1.954229897	1.7172126384	-0.681570808	-3.041048584
## 983	-1.2215968040	2.134501407	1.5026440371	0.549650605	0.857419180
## 997	-0.7687071543	-1.244916272	0.4159853515	0.620294072	-2.721691768
## 1017	2.6290964834	0.037052834	-0.4219446327	1.211284955	-1.347582757
## 1027	2.2367185780	0.279623075	-0.1348964210	0.276842502	0.811487878
## 1037	-0.5354086583	-2.419840636	-0.6495412800	1.323810494	0.134176824
## 1067	-0.9392081127	-1.661748881	-3.2974720787	-0.631491753	-0.855186612
## 1079	-0.8472508060	-1.749008206	-2.6606717320	-0.082865339	-0.601889850
## 1094	1.6611755191	0.407937756	0.2508771796	-1.854405817	1.577522533
## 1099	0.0751790170	-1.083685917	0.7336923745	-1.200165624	-0.250939682
## 1101	0.2374156282	-1.380671768	0.3032578156	-0.752431114	2.704882093
## 1103	-1.3578359239	1.752147030	0.3273781805	0.980206118	-0.412175446
## 1112	2.9287404136	0.085387617	-0.3666075687	2.082983737	-1.387325971
## 1116	0.2124709145	1.202943268	0.2612269728	-1.229892570	1.618237175
## 1117	-0.3745413426	-3.117924657	0.1980023377	2.708024612	3.225230205
## 1145	-0.6449753049	-1.597583056	1.3867628988	-0.116549127	-3.407833249
## 1146	2.8213932018	0.234855826	-0.3070604696	2.192476715	0.042599982
## 1150	0.0438403160	-1.355154353	1.5303245291	-2.235688246	-1.498026307
## 1155	-0.1376475651	-0.955974165	1.7690258599	-1.202819140	-1.475161400

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## 1157 2.7550637475 0.109963349 -0.1791602817 0.931406252 0.602574811
## 1159 -1.2101382119 1.965658265 -1.8743640656 0.007023899 0.493996859
## 1162 2.9575418377 0.143120470 -0.4067183279 2.267481871 -1.787706878
## 1166 3.0916981354 0.314337250 -0.4760863973 2.856981258 -2.003055796
## 1174 -1.4086267254 2.744531018 0.8701711977 0.440400746 0.090269460
## 1175 -1.4559329661 2.709408061 0.8085464900 0.432061800 0.093824374
## 1176 -0.3954105400 -2.976983727 0.0999986025 2.478325335 2.917565460
## 1185 -1.2186125102 1.355455875 -2.4041626880 -0.039950815 0.171729325
## 1190 0.3634144524 -0.700863906 1.3576233232 -1.386257470 -0.677619339
## 1199 -0.6224712101 -1.489711378 1.4056807708 0.998194421 2.643831429
## 1204 2.6782081426 -0.021149230 -0.1243827063 0.453047025 0.335854845
## 1205 -0.0699731109 0.341346850 1.2912260248 -0.283697817 0.019266625
## 1210 0.2111446044 -1.202594571 0.8499541419 -1.511744937 -0.682410881
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## 1273 -0.9716691295 2.143226190 -1.1632371868 0.230474581 0.433325954
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## 1374 -1.2878023187 2.169366376 1.2963637946 0.542242658 0.764668615
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## 1399 -1.2349129134 2.147922497 1.2899870185 0.473393367 0.717827983
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## 1415 1.3301119840 -1.052328651 0.3153081429 -3.807989407 -0.327114004
## 1418 0.1959102422 -0.415639668 1.3838690545 -1.069786128 -0.615670194
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## 1460 -1.4454533134 2.676984317 0.8080195423 0.861771035 0.520271145
## 1473 -0.1811577356 -1.649332815 1.8158501333 -1.696262707 -2.266788593

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## 1480 -1.1839286267 1.440628204 -2.2437300905 -0.062344771 0.275400711
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## 1497 -1.3422479588 2.263897793 -1.6809680767 -0.071382034 0.033143789
## 1503 1.6820530151 0.422033753 -0.0895369041 -0.112310846 0.738077775
## 1515 -0.8481707382 0.788072286 1.3116002502 0.588867137 -0.062495145
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## 1522 -0.4499134303 -3.398452960 0.2393750150 3.191868577 3.710214076
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## 1553 -1.2511575221 0.913775311 0.9061824930 1.389620338 -1.113202092
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## 1569 1.8595692012 -0.682864054 0.0474065935 -1.968493249 0.305749913
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## 1716 -1.4394307249 2.307338319 0.2574800224 0.649566494 -0.180273661
## 1721 -0.4736188852 -3.395354557 0.2454481258 3.180528128 3.672756542
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## 1790 -1.0506340739 0.307602762 0.0223364483 0.925924500 -1.543447644
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## 1826 -1.2926289386 1.030621056 0.6512279455 1.351177286 -1.003949885
## 1830 -0.8537248498 0.948039071 -2.0784778958 -0.020150865 0.564057325
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## 1859 -0.4350069248 -3.253019948 0.2218232363 2.946024668 3.436025207
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## 1869 -0.4466930073 -2.934808658 0.0674495018 2.576569459 2.919214534
## 1874 -0.8263369473 -0.177062628 1.4465543068 0.472471603 -1.418726640
## 1886 -0.9623909064 0.715618893 -2.0531780815 -0.216438588 0.453857882
## 1905 -1.1811402553 2.254982701 1.4328558166 0.253577453 0.907594256
## 1906 1.8847786563 -0.867349099 0.1994270523 -2.922666411 0.459066676
## 1910 -0.3535510609 -1.771575253 1.6827870861 -0.589509101 -1.697508737
## 1932 2.4587154509 0.208301883 -0.1006206233 0.699029392 0.767707638
## 1933 -0.8348657368 -0.746935893 0.5695650944 0.638668867 -2.318028282
## 1934 -1.0117290557 0.939967125 -2.1757508899 -0.135472247 0.378235383
## 1937 -1.1288404278 2.339326389 1.3294189566 0.105823343 0.761504737
## 1940 -0.5638285999 -1.377694885 1.1686932425 0.754371881 1.518618180
## 1954 -1.4702029800 2.751056215 0.7926452817 0.445106917 0.071616463
## 1963 2.9639463350 0.161259345 -0.3905121906 2.224320222 -1.617953272
## 1965 -0.8798761653 1.345543986 1.4259379357 0.513555474 0.567369806
## 1966 -1.2371022221 -0.233697108 -3.4657019411 -0.352363575 -0.420564659
## 1967 -0.9301506431 0.874555711 1.2299290636 0.656528946 -0.056512621
## 1974 3.0717476490 0.247699541 -0.4565620171 2.816023144 -1.891928209
## 1983 1.8041305386 -0.660442204 -0.0530651659 -1.926193938 0.151568756

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## 2011 1.8234143736 0.319980990 0.1453374994 -1.774085886 1.376067390
## 2026 1.3284495540 0.647052596 0.0289810157 -0.526689136 0.964561253
## 2032 0.3280268076 -1.282655768 0.2782579240 -0.960926706 2.534618964
## 2054 -1.0671516569 1.114076053 1.0769568102 0.973877695 -0.337416964
## 2064 3.0511448321 0.206994294 -0.4482888984 2.494971225 -2.056344821
## 2073 -0.7121650748 -1.459475572 1.0347177535 0.063668232 -2.911173666
## 2078 2.8801371204 0.098434760 -0.4093224104 2.022674050 -1.666019025
## 2080 0.4227036399 -1.232931825 0.3037913275 -1.204729726 2.403763295
## 2091 -1.1550711690 1.495363486 0.8402485958 0.992839011 -0.183171157
## 2102 -0.4276527014 -3.152169434 0.2187672485 2.775394025 3.431296538
## 2105 -1.2845707153 1.586540415 -1.9709136582 0.114075912 -0.172460340
## 2120 -0.3757592934 -1.601083965 1.4421506876 -0.414030131 -1.613805513
## 2125 -1.1888563237 2.494522543 1.2044010036 0.236663519 0.742023935
## 2128 -0.9293918620 1.762949029 1.6512830625 0.602022411 1.180692921
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## 2179 1.5751162397 -0.942607069 0.2674259634 -3.798951894 0.128792404
## 2180 1.5945674782 -0.928724934 0.2371146225 -3.820371342 0.163695191
## 2182 0.9663696708 -1.155440840 0.4225546690 -3.172010935 -0.306291115
## 2189 -1.2197876296 2.367682880 1.4070339286 0.294844693 0.775973106
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## 2201 -1.4297596089 2.704263379 0.6984425509 0.831287391 0.551879146
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## 2284 0.2567110326 -0.184904554 1.2442277567 -0.912531050 -0.316190182
## 2292 -1.1826037415 0.930774876 -0.1761128153 0.798999006 -0.844131948
## 2295 -1.2624033390 1.374032013 0.7756561389 1.272655450 -0.640895033
## 2296 -1.4654659892 2.773516060 0.8123982358 0.488760335 0.169899071
## 2298 1.8683128060 -0.917558789 0.1544624449 -3.403449871 0.486552308
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## 2367 2.8163761793 0.334019309 -0.3867569558 2.591241244 -0.334343011
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## 2438 0.8680012757 1.035707791 0.0214386111 -0.895563435 1.282279672
## 2439 -1.4227396173 2.535799582 0.5439998615 0.430039441 0.032427051
## 2451 -1.2301125762 1.203834037 0.2805014808 0.947779512 -0.824574954
## 2452 -0.5022941181 -1.336799957 0.9035546463 -0.123581969 -1.851015916
## 2454 -1.0139474771 1.301524336 -2.4206119906 -0.058649361 0.674115945

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## 2462 -1.3996344540 2.244040399 0.3150054815 0.631586317 -0.176605295
## 2468 0.3285268298 -1.285470694 0.2855389419 -0.846803055 2.680232722
## 2474 -1.0899283829 -0.745768868 -3.1363083280 -0.371038405 -0.522445780
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## 2634 -0.6113730245 -1.487631097 0.6999801501 0.194084781 -2.599126473
## 2636 3.0289385608 0.166112001 -0.4779476850 2.571676738 -2.033372725
## 2645 -1.0347609829 1.885147308 1.5724229779 0.578246150 1.180125191
## 2658 0.0985478428 -1.923492340 -0.1652257722 0.016953461 0.351245434
## 2661 -0.3177373935 -1.940228304 1.7553990886 -0.709216648 -3.105823313
## 2666 0.2197049131 1.341911705 0.3305020584 -1.364841907 1.589903125
## 2672 -1.4292299774 2.600779810 0.7787382186 0.872459914 0.543357257
## 2680 -0.9991411858 -1.589797715 -3.4129106492 -0.592387203 -0.926981343
## 2686 -0.9552811659 -1.656377852 -3.3405750781 -0.579187704 -0.841168405
## 2709 -0.4134167727 -2.607812173 -0.3046643065 1.464349555 0.381633440
## 2718 -1.1724070444 2.414991456 1.2901612431 0.192906125 0.747356855
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## 4768 -0.723398426
## 4777  0.167963899
## 4800 -0.354498598
## 4806  0.361333715
## 4816 -1.649328031
## 4824  1.659162957
## 4839  0.955997015
## 4849 -0.404640444
## 4870  1.361652909
## 4895  0.554973813
## 4924 -3.652337877
## 4945 -1.992087586
## 4947  1.263773852
## 4948  4.151626191
## 4953 -1.751106865
## 4962 -2.010314611
## 4969 -1.485118761
## 4974  1.268811155
## 4990  0.678428316
## 4998  2.585102013
## 4999 -3.794761663
## 5000 -0.066170452
## 5008  0.054174842
## 5014 -0.056210141
## 5024  2.495057358
## 5037 -0.361874423
## 5039 -3.254000916
## 5064 -0.689857823
## 5066  0.333674645
## 5085  0.076754586
## 5089 -3.017833486
## 5093  0.874594810
## 5095  0.726078606
## 5110  3.232243854
## 5118 -1.230394928
## 5125 -1.201501326
## 5145  3.181791057
```

```
## 5149 -1.049956437
## 5162 -0.993966373
## 5165 1.287142498
## 5168 1.077574243
## 5172 -0.106427786
## 5175 3.109315617
## 5176 -1.728306363
## 5181 -1.255530055
## 5184 -1.212731613
## 5189 -2.687920664
## 5193 -0.039792516
## 5213 -0.060560042
## 5214 -0.541387202
## 5216 0.062822527
## 5243 3.524748734
## 5255 0.798358152
## 5256 0.434388753
## 5261 -3.265905991
## 5264 -0.734165378
## 5268 0.204325509
## 5278 -1.781181895
## 5297 1.521776928
## 5300 0.831908805
## 5307 -1.456203203
## 5328 -0.465245943
## 5331 -1.042104582
## 5338 0.866786928
## 5354 -1.986919279
## 5361 1.413376962
## 5381 -0.183666967
## 5382 -1.223301672
## 5392 2.129220403
## 5427 -0.772003388
## 5434 1.478703294
## 5439 0.530668537
## 5442 -2.069074533
## 5449 -1.578777366
## 5454 -1.787394032
## 5468 0.342311192
## 5478 -0.359167952
## 5484 0.860587470
## 5500 0.076289524
## 5521 -1.318707617
## 5525 -3.445017740
## 5530 -0.804250588
## 5543 -0.764964361
## 5547 -0.596106827
## 5559 -1.686782066
## 5561 -1.018387833
## 5563 1.046011462
## 5567 -0.687196365
## 5570 -0.688357472
## 5573 0.443910889
## 5590 -1.118689949
```

```
## 5598 -0.010076161
## 5602 -0.798425585
## 5605 -0.990819866
## 5615 -0.659196788
## 5646 -0.328982474
## 5658 -0.105853658
## 5667 -2.039608104
## 5704 1.486600159
## 5709 -1.542036553
## 5710 0.221769022
## 5718 0.831461690
## 5721 1.540934841
## 5727 -0.260332802
## 5728 2.702244917
## 5729 0.460496552
## 5737 1.222040353
## 5743 -1.428929828
## 5750 2.290742076
## 5752 -0.319387381
## 5757 -1.084261099
## 5764 -2.356932520
## 5767 0.452761507
## 5768 1.088893565
## 5773 0.492301526
## 5797 1.481671414
## 5799 0.634556860
## 5807 2.768661643
## 5824 -1.990123217
## 5829 -0.454047667
## 5830 0.049129967
## 5838 0.375108714
## 5839 -0.449383868
## 5859 0.756316516
## 5863 -0.950260950
## 5865 -2.748101252
## 5899 -0.509993693
## 5901 -0.689946272
## 5907 -1.322690844
## 5916 0.448666698
## 5920 -1.140139580
## 5929 -1.239505149
## 5934 -0.242455139
## 5935 -2.249609223
## 5945 -0.613512607
## 5953 -0.351572565
## 5954 0.882346245
## 5966 0.752966427
## 5980 -0.812702992
## 5986 0.177370388
## 5993 -0.144457176
## 6003 0.928312708
## 6013 0.418918684
## 6024 -0.011628098
## 6050 -1.178861176
```

```
## 6051 -0.434605021
## 6057  1.344151537
## 6059 -1.871832155
## 6065  1.653755893
## 6087 -3.236194323
## 6110  0.212760027
## 6134 -2.735866680
## 6143  0.356518419
## 6154 -1.201874137
## 6160  0.356604979
## 6162 -0.676045072
## 6177  1.065906283
## 6186 -1.546017008
## 6188  3.841075996
## 6190  0.3655529819
## 6194 -0.285567035
## 6197  1.145297938
## 6201 -0.279085590
## 6221 -1.882687189
## 6222  0.290491225
## 6223  0.257249275
## 6228  1.507104578
## 6236 -2.057741881
## 6238  3.091752691
## 6240 -2.053215166
## 6255 -3.107582256
## 6256 -0.654346388
## 6257 -0.154152757
## 6263 -0.873375923
## 6264  1.377409082
## 6270 -1.469488758
## 6275  0.172088204
## 6277 -1.843302710
## 6283 -0.472589593
## 6287  1.870662181
## 6293 -0.752699860
## 6307  2.045701777
## 6308 -2.229026981
## 6310  0.536871873
## 6352  0.417523520
## 6357 -2.443684213
## 6366  0.330691287
## 6381 -1.414251935
## 6388 -0.177375981
## 6389  1.454223128
## 6393  1.028328658
## 6407  0.237174429
## 6410 -3.359675466
## 6413 -0.100394480
## 6419  0.491962329
## 6428  0.090445850
## 6429  0.073369718
## 6438  0.623757338
## 6443 -0.051000286
```

```
## 6457 -0.283960567
## 6459 -0.734880438
## 6474 -1.089954921
## 6488 0.041996763
## 6489 -0.828394120
## 6492 2.929878426
## 6499 0.276422130
## 6506 0.377807217
## 6511 0.159764355
## 6514 -0.221345230
## 6535 1.097024447
## 6555 1.860161336
## 6563 0.040427436
## 6567 2.852812765
## 6568 -1.339818137
## 6574 1.328168303
## 6582 -0.610633541
## 6590 -1.502925873
## 6597 -0.196813255
## 6604 -0.007599243
## 6613 -1.875070826
## 6638 -1.800795005
## 6652 -0.766151362
## 6674 -1.464886359
## 6697 3.084478560
## 6699 -1.208034466
## 6707 -2.301511355
## 6728 0.367136917
## 6736 -2.840527636
## 6762 0.576925445
## 6772 -0.154783064
## 6787 -1.922926714
## 6790 -2.370056677
## 6791 1.399037831
## 6792 -2.422115306
## 6793 3.438915605
## 6806 -0.931932160
## 6836 0.366440591
## 6856 1.794787043
## 6863 -1.937740401
## 6865 1.714851920
## 6880 -0.755011197
## 6898 1.397776659
## 6903 1.433607155
## 6919 -1.589625765
## 6931 -0.757892730
## 6953 0.729744001
## 6955 0.110405383
## 6958 -0.148026375
## 6971 -1.195306861
## 6974 -0.537114974
## 6979 -0.035946822
## 7010 -1.585993674
## 7014 0.772023750
```

```
## 7023 -1.010155491
## 7030 -0.003612963
## 7033 -0.512349491
## 7050 -0.074070105
## 7064 0.872863317
## 7085 0.783341933
## 7088 1.322524637
## 7091 0.066372736
## 7094 -2.696882416
## 7095 0.958249262
## 7109 1.003858589
## 7112 -0.166083678
## 7118 -1.202898479
## 7127 1.808584704
## 7131 2.553589468
## 7132 1.004126159
## 7134 1.452385910
## 7137 -0.589226555
## 7155 -1.957727605
## 7160 -0.300839380
## 7169 -0.452165828
## 7177 -0.572074857
## 7182 -3.865603602
## 7192 0.179718374
## 7199 1.009021277
## 7203 0.790527651
## 7208 -0.677582340
## 7209 -2.122695749
## 7210 -1.485549803
## 7220 -0.383753286
## 7224 0.601995348
## 7243 3.508329545
## 7247 -0.265646379
## 7263 -1.097432492
## 7264 0.650054252
## 7266 1.029241406
## 7267 0.580320496
## 7288 0.216734478
## 7296 2.813148544
## 7299 -0.428200224
## 7300 0.241698655
## 7304 -0.618566054
## 7310 -0.251795265
## 7324 0.803466897
## 7327 -0.387096274
## 7331 -2.458198486
## 7334 3.271251886
## 7345 -1.235321207
## 7348 -1.204883308
## 7350 -0.475087182
## 7355 -0.750467429
## 7366 -3.747747186
## 7371 -1.057746275
## 7409 0.398258977
```

```

## 7412  1.618480924
## 7419  2.152198062
## 7426 -0.022921502
## 7433 -0.291864685
## 7453 -0.706729518
## 7457  0.546157071
## 7464 -1.307255653
## 7475  0.237396892
## 7477 -0.396897731
## 7482  2.144641446
## 7486 -0.594981392
## 7502  4.070444704
## 7504  0.645732882
## 7510 -2.335501950
## 7518  1.044576263
## 7525  0.768758087
## 7535  0.409955070
## 7552 -3.352446676
## 7555 -0.072824129
## 7564  3.543178781
## 7583 -0.116772745
## 7586  2.573376450
## 7596  0.272785987
## 7597 -0.344631872
## 7602  0.948820169
## 7607  0.130255440
## 7626  2.235308232
## 7641 -3.516968421
## 7649 -3.158319588
## 7674  2.615764362
## 7678  3.889640980
## 7697 -0.443672499
## 7703  3.268950541
## 7707  0.223553661
## 7721  0.180213606
## 7726 -1.466105388
## 7737  2.581719171
## 7747  1.668823764
## 7752 -2.023478313
## 7767 -0.463449122
## 7774  1.208954136
## 7781  1.401741885
## 7784 -0.199321299
## 7788 -1.396108667
## 7790 -2.421751196
## 7796 -1.421034252
## 7799 -1.665452036
## 7810  1.147845922
## 7813 -0.095345396
## 7826 -0.693624510
## 7830  0.729004618
## 7834 -1.761721791
## 7839 -1.294624179
## 7857 -0.482255789

```

```
## 7870  0.865981659
## 7876 -3.612522593
## 7887  1.807621945
## 7904 -1.227364885
## 7910 -3.504051552
## 7913  1.481611635
## 7916 -0.706249863
## 7924 -0.508728205
## 7930  2.801873418
## 7933 -3.748853557
## 7948  2.037446023
## 7968  2.098397722
## 7978  2.253646437
## 7985  0.352213513
## 8025  0.366645200
## 8041 -0.316894198
## 8047 -0.321546644
## 8050  0.717049360
## 8052  2.098108058
## 8066  1.276912990
## 8070  3.016994915
## 8085 -0.006495634
## 8096 -0.364161404
## 8103  3.121299671
## 8113  0.134641007
## 8115  1.881280429
## 8122  1.519636326
## 8129 -0.198420410
## 8132 -1.346489331
## 8135 -1.682468738
## 8136  0.643481585
## 8138 -1.188974626
## 8140  0.418754259
## 8141  2.008489462
## 8153  1.108637043
## 8164 -0.681735634
## 8170 -2.036966309
## 8173 -1.873308946
## 8188  1.836405526
## 8218  2.704137549
## 8223 -1.042031363
## 8229  1.417268267
## 8230 -0.329317198
## 8232  3.213568597
## 8243  0.469784184
## 8253 -0.061290334
## 8287  3.556697132
## 8312  0.771878870
## 8327  1.172055020
## 8331 -2.004661551
## 8347 -0.148428399
## 8352 -1.286739541
## 8360 -0.442608999
## 8361 -0.442553563
```

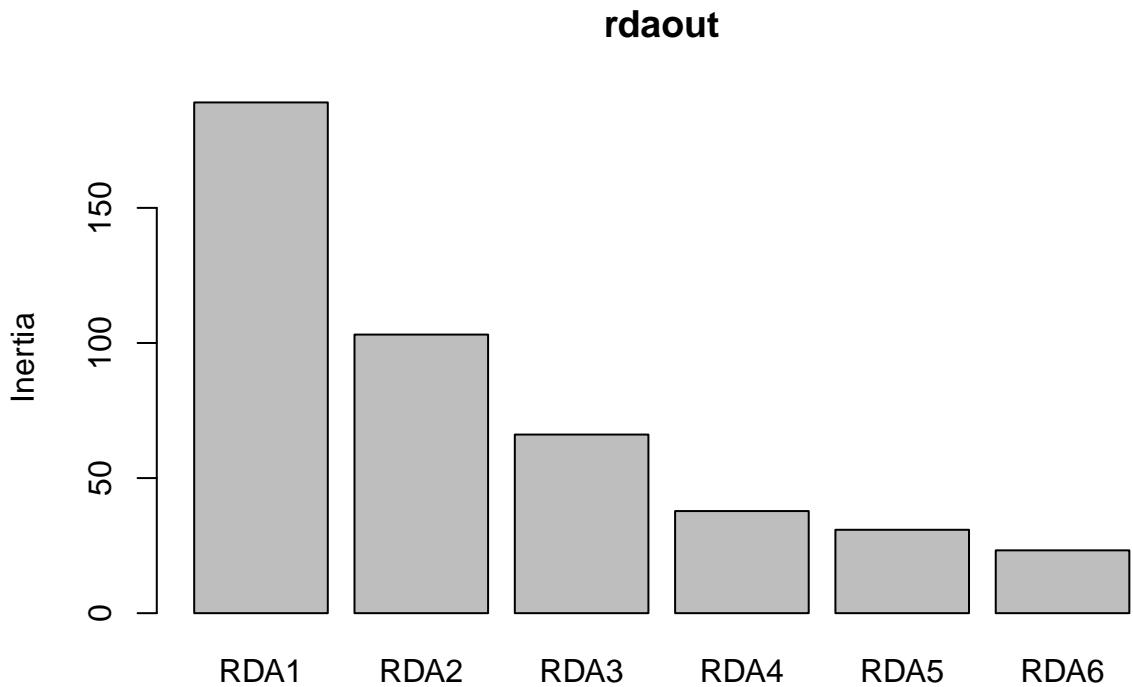
```

## 8368 -2.363742964
## 8372 -0.021960939
## 8393 1.003025219
## 8395 -0.539229647
## 8403 -0.399060936
## 8410 1.255882005
## 8418 2.565533222
## 8419 0.016354980
## 8433 0.310616541
## 8447 -0.027401188
## 8457 -0.507338413
## 8459 -0.066407428
## 8463 -0.556372305
## 8469 -1.262180194
## 8485 0.032311166
## 8501 0.272608201
## 8504 3.829947119
## 8510 -0.427137012
## 8517 0.977455524
## 8534 -0.145197319
## 8535 0.820835559
## 8536 1.009254471
## 8537 -0.289686666
## 8548 -1.823315656
## 8560 0.473849713
## 8565 0.708143881
## 8576 4.045267315
## 8581 3.344029516
## 8583 -1.893012652
## 8586 -0.270421554
## 8591 0.648082915
##
## $centroids
## [1] NA
##
## attr(,"const")
## [1] 39.30048

loci.sc <- scores$species
ind.sc <- scores$sites
subset_indPhen_df$RDA1 <- ind.sc[,1]
subset_indPhen_df$RDA2 <- ind.sc[,2]
subset_indPhen_df$RDA3 <- ind.sc[,3]
subset_indPhen_df$RDA4 <- ind.sc[,4]

a<- screeplot(rdaout)

```



```

str(a)

## List of 4
## $ x   : num [1:6] 0.7 1.9 3.1 4.3 5.5 6.7
## $ y   : num [1:6] 189 103.1 66.1 37.8 30.9 ...
## $ xlab: NULL
## $ ylab: NULL

a$y # save this it's the eigenvalues

## [1] 189.02481 103.10740  66.10749  37.79033  30.86247  23.24983

prop_var <- round(a$y[1:6]/sum(a$y),3)
cumsum(prop_var)

## [1] 0.420 0.649 0.796 0.880 0.949 1.001

rdaout$CCA$biplot

##                                     RDA1        RDA2        RDA3        RDA4
## subset_indPhen_df$env1_mat -0.5004451  0.01863416 -0.5476147  0.54418964
## subset_indPhen_df$env2_MTWetQ  0.4523477  0.19158505 -0.8296969 -0.11392353
## subset_indPhen_df$env3_MTDQ  -0.7128197 -0.22757653  0.1200761  0.48309488
## subset_indPhen_df$env4_PDM   -0.3843437  0.04904761  0.8297919 -0.24744529
## subset_indPhen_df$env5_PwarmQ  0.6524152  0.56221376  0.4505148  0.02427266
## subset_indPhen_df$env6_PWM    0.3209795 -0.05176393  0.7346369  0.19495732
##                                     RDA5        RDA6
## subset_indPhen_df$env1_mat -0.37298079 -0.1186113
## subset_indPhen_df$env2_MTWetQ  0.03132509 -0.2373183

```

```

## subset_indPhen_df$env3_MTDQ      0.33816827 -0.2791780
## subset_indPhen_df$env4_PDM       0.09707124 -0.3011107
## subset_indPhen_df$env5_PwarmQ   -0.04630498 -0.2292885
## subset_indPhen_df$env6_PWM      -0.08780176 -0.5557731

enviRDA=unlist(lapply(strsplit(rownames(rdaout$CCA$biplot), "_"), function(x){x[4]}))
phencols <- grep("phenotype", colnames(indPhen_df))

```

Visualize RDA

```
str(subset_indPhen_df)
```

```

## 'data.frame':   1000 obs. of  22 variables:
## $ seed           : int  892657863 892657863 892657863 892657863 892657863 ...
## $ ind_index      : int  33 34 44 45 46 64 65 72 85 106 ...
## $ x              : num  0.4062 0.4257 0.6717 0.0175 0.0697 ...
## $ y              : num  0.233 0.837 0.582 0.33 0.121 ...
## $ phenotype1_mat : num  0.738 -0.2741 -0.6763 -0.2832 0.0576 ...
## $ phenotype2_MTWetQ: num  -0.1914 -0.4283 0.0866 -0.4039 -0.3032 ...
## $ phenotype3_MTDQ : num  0.143 -0.0129 -0.4707 -0.3337 0.7316 ...
## $ phenotype4_PDM  : num  -0.132 0.221 0.219 -0.201 0.196 ...
## $ phenotype5_PwarmQ: num  -0.452 0.229 0.26 -0.346 -0.367 ...
## $ phenotype6_PWM  : num  -0.5417 0.0666 -0.1035 -0.41 0.1963 ...
## $ env1_mat        : num  0.762 -0.339 -0.568 -0.246 -0.121 ...
## $ env2_MTWetQ    : num  -0.1622 -0.4077 0.0909 -0.2008 -0.3064 ...
## $ env3_MTDQ       : num  0.2613 -0.0583 -0.4144 -0.2675 0.7029 ...
## $ env4_PDM        : num  -0.332 0.288 0.235 -0.265 0.211 ...
## $ env5_PwarmQ    : num  -0.472 0.199 0.23 -0.39 -0.352 ...
## $ env6_PWM         : num  -0.4778 0.0177 -0.0535 -0.459 0.2128 ...
## $ indID          : int  34 35 45 46 47 65 66 73 86 107 ...
## $ subset          : logi  TRUE TRUE TRUE TRUE TRUE TRUE ...
## $ RDA1            : num  -0.8643 -1.1049 1.8957 0.0926 -0.4219 ...
## $ RDA2            : num  -0.917 2.169 0.279 -1.908 -3.166 ...
## $ RDA3            : num  -0.624 1.484 0.347 -0.206 0.195 ...
## $ RDA4            : num  0.4282 0.387 -3.3501 0.0107 2.8926 ...

```

```

plot_env <- function(i, maintext){
  scalea=2
  subset_indPhen_df$color <- subset_indPhen_df[,phencols[i]]
  p1 <- ggplot(subset_indPhen_df) +
    geom_point(aes(x=RDA1, y = RDA2, col=color)) +
    scale_colour_viridis(breaks=seq(-1,1,0.5))+ 
    geom_segment(aes(x=0,y=0,
                      xend=rdaout$CCA$biplot[i,1]*scalea,
                      yend=rdaout$CCA$biplot[i,2]*scalea),
                  arrow=arrow(length = unit(0.2, "cm")))+ 
    geom_text(aes(x=rdaout$CCA$biplot[i,1]*scalea,
                  y=rdaout$CCA$biplot[i,2]*scalea,
                  label=enviRDA[i]),
              hjust="right", vjust="bottom") + ggtheme + ggtitle(maintext) +
    labs(color="Trait\nnValue")
}

```

```

p2 <- ggplot(subset_indPhen_df) +
  geom_point(aes(x=RDA3, y = RDA4, col=color)) +
  scale_colour_viridis(breaks=seq(-1,1,0.5))+ 
  geom_segment(aes(x=0,y=0,
                    xend=rdaout$CCA$biplot[i,3]*scalea,
                    yend=rdaout$CCA$biplot[i,4]*scalea),
                arrow=arrow(length = unit(0.2,"cm")))+ 
  geom_text(aes(x=rdaout$CCA$biplot[i,3]*scalea,
                y=rdaout$CCA$biplot[i,4]*scalea,
                label=enviRDA[i]),
            hjust="right", vjust="bottom") + ggtheme + ggtitle("") +
  labs(color="Stnd.\nEnvi.\nValue")

grid.arrange(p1,p2, ncol=2)
}

# TO DO OUTPUT TO PDFS

pdf("plots_RDAs.pdf", height=4, width=10)
plot_env(1, "A) MAT")
plot_env(2, "B) MTWetQ")
plot_env(3, "C) MTDQ")
plot_env(4, "D) PDM")
plot_env(5, "E) PwarmQ")
plot_env(6, "F) PWM")
dev.off()

## pdf
## 2

```

Function to Back-calculate RDA trait prediction

```

rdaout$CCA$biplot

##                                     RDA1        RDA2        RDA3        RDA4
## subset_indPhen_df$env1_mat -0.5004451  0.01863416 -0.5476147  0.54418964
## subset_indPhen_df$env2_MTWetQ  0.4523477  0.19158505 -0.8296969 -0.11392353
## subset_indPhen_df$env3_MTDQ   -0.7128197 -0.22757653  0.1200761  0.48309488
## subset_indPhen_df$env4_PDM    -0.3843437  0.04904761  0.8297919 -0.24744529
## subset_indPhen_df$env5_PwarmQ  0.6524152  0.56221376  0.4505148  0.02427266
## subset_indPhen_df$env6_PWM     0.3209795 -0.05176393  0.7346369  0.19495732
##                                     RDA5        RDA6
## subset_indPhen_df$env1_mat   -0.37298079 -0.1186113
## subset_indPhen_df$env2_MTWetQ  0.03132509 -0.2373183
## subset_indPhen_df$env3_MTDQ   0.33816827 -0.2791780
## subset_indPhen_df$env4_PDM    0.09707124 -0.3011107
## subset_indPhen_df$env5_PwarmQ -0.04630498 -0.2292885
## subset_indPhen_df$env6_PWM     -0.08780176 -0.5557731

```

```

rda_trait_pred <- function(rdaobj, env_row, K){
  #rdaobj is RDA object
  #envi row is the row of the environment in the biplot output
  #K is the number of RDA axes
  scores <- scores(rdaobj, choices=1:K)
  ind.sc <- scores$sites
  pred <- matrix(NA, nrow=nrow(ind.sc), ncol=K)
  for (k in 1:K){
    pred[,k] <- ind.sc[,k]*eigenvals(rdaobj)[k]*summary(rdaobj)$biplot[env_row,k]
  }
  trait_pred <- scale(rowSums(pred))
  return(trait_pred)
}

newcols <- paste("rda_trait_pred", 1:6, enviRDA, sep="_")

rdaout_pred <- data.frame(matrix(NA,
                                    nrow=nrow(subset_indPhen_df),
                                    ncol=6)
                           )

colnames(rdaout_pred) <- newcols

# Choose 3 RDA axes that explain 75% of the variation
for (i in 1:6){ # hard coding here!!
  rdaout_pred[,i] <- unlist(rda_trait_pred(rdaout, i, 3))
}
subset_indPhen_df <- cbind(subset_indPhen_df, rdaout_pred)
head(subset_indPhen_df)

##          seed ind_index      x phenotype1_mat phenotype2_MTWetQ
## 34 892657863       33 0.4061840 0.233272     0.7379670 -0.1914210
## 35 892657863       34 0.4256970 0.837158    -0.2740810 -0.4283320
## 45 892657863       44 0.6716730 0.581744    -0.6763260  0.0866287
## 46 892657863       45 0.0174659 0.329922    -0.2832210 -0.4039420
## 47 892657863       46 0.0697436 0.121221     0.0576163 -0.3032010
## 65 892657863       64 0.1433610 0.233237     0.2656280 -0.2318730
## phenotype3_MTDQ phenotype4_PDM phenotype5_PwarmQ phenotype6_PWM env1_mat
## 34        0.142992   -0.131894     -0.452497   -0.5416510  0.762432
## 35       -0.012880    0.221058     0.229296    0.0665969 -0.339330
## 45       -0.470671    0.218813     0.260098   -0.1034650 -0.567733
## 46       -0.333718   -0.200554    -0.345915   -0.4100010 -0.245860
## 47        0.731600    0.195679    -0.367110    0.1962960 -0.121500
## 65        0.214004   -0.239776    -0.517086   -0.2582660  0.103057
## env2_MTWetQ env3_MTDQ env4_PDM env5_PwarmQ env6_PWM indID subset
## 34     -0.1622380  0.2612810 -0.332078   -0.471502 -0.4778210   34  TRUE
## 35     -0.4076670 -0.0582962  0.288030    0.198810  0.0176800   35  TRUE
## 45      0.0909278 -0.4143530  0.234899    0.230255 -0.0535109   45  TRUE
## 46     -0.2007590 -0.2674550 -0.265260   -0.389828 -0.4589790   46  TRUE
## 47     -0.3063790  0.7028580  0.211275   -0.352307  0.2127510   47  TRUE
## 65     -0.2863170  0.1657060 -0.190813   -0.476650 -0.2927740   65  TRUE
##          RDA1        RDA2        RDA3        RDA4 rda_trait_pred_1_mat
## 34 -0.86430581 -0.9166130 -0.6236796  0.42815736  0.71113715

```

```

## 35 -1.10493855 2.1694436 1.4839047 0.38699170      0.38110458
## 45  1.89569056 0.2790137 0.3473426 -3.35012341     -1.32666788
## 46  0.09261835 -1.9084997 -0.2064070 0.01068788     -0.03435832
## 47 -0.42193942 -3.1656751 0.1950282 2.89261642      0.18559815
## 65 -0.48972800 -2.6743048 -0.4102364 1.53197385      0.38850483
##   rda_trait_pred_2_MTWetQ rda_trait_pred_3_MTDQ rda_trait_pred_4_PDM
## 34          -0.4338363          0.7276325      0.196319735
## 35          -0.9983652          0.6003877      1.415511759
## 45           1.1149832         -1.4179971     -0.961392116
## 46          -0.1385528          0.1677459     -0.227134452
## 47          -0.8204453          0.7258162      0.207786435
## 65          -0.5419195          0.6864266     -0.003682457
##   rda_trait_pred_5_PwarmQ rda_trait_pred_6_PWM
## 34          -0.9832306         -0.696169112
## 35           0.1857819         -0.058610158
## 45           1.4354370          1.166263029
## 46          -0.5810013          0.051708655
## 47          -1.2668857          0.006861397
## 65          -1.2553170         -0.316284936

```

Compare RDA trait prediction to true trait prediction

```

#TO DO MATRIX FOR BAR GRAPH

RDAbarplot <- matrix(NA, nrow=6, ncol=4)
colnames(RDAbarplot) <- c("RDA", "RDA + nuisance env.", "pRDA - geography", "pRDA - PCs")
rownames(RDAbarplot) <- c("MAT", "MTWetQ", "MTDQ", "PDM", "PwarmQ", "PWM")

RDAbarplot[,1] <- c(
  cor(subset_indPhen_df$phenotype1_mat, subset_indPhen_df$rda_trait_pred_1_mat) ,
  cor(subset_indPhen_df$phenotype2_MTWetQ, subset_indPhen_df$rda_trait_pred_2_MTWetQ) ,
  cor(subset_indPhen_df$phenotype3_MTDQ, subset_indPhen_df$rda_trait_pred_3_MTDQ) ,
  cor(subset_indPhen_df$phenotype4_PDM, subset_indPhen_df$rda_trait_pred_4_PDM) ,
  cor(subset_indPhen_df$phenotype5_PwarmQ, subset_indPhen_df$rda_trait_pred_5_PwarmQ) ,
  cor(subset_indPhen_df$phenotype6_PWM, subset_indPhen_df$rda_trait_pred_6_PWM)
)

```

Compare with an RDA conditioned on geographic distance

Check if poor performers are correlated with lat/long

```

rdaout_geo <- rda(t(G_full_subset) ~ subset_indPhen_df$env1_mat +
                     subset_indPhen_df$env2_MTWetQ +
                     subset_indPhen_df$env3_MTDQ +
                     subset_indPhen_df$env4_PDM +
                     subset_indPhen_df$env5_PwarmQ +
                     subset_indPhen_df$env6_PWM +
                     Condition(subset_indPhen_df$x + subset_indPhen_df$y)
)

```

```

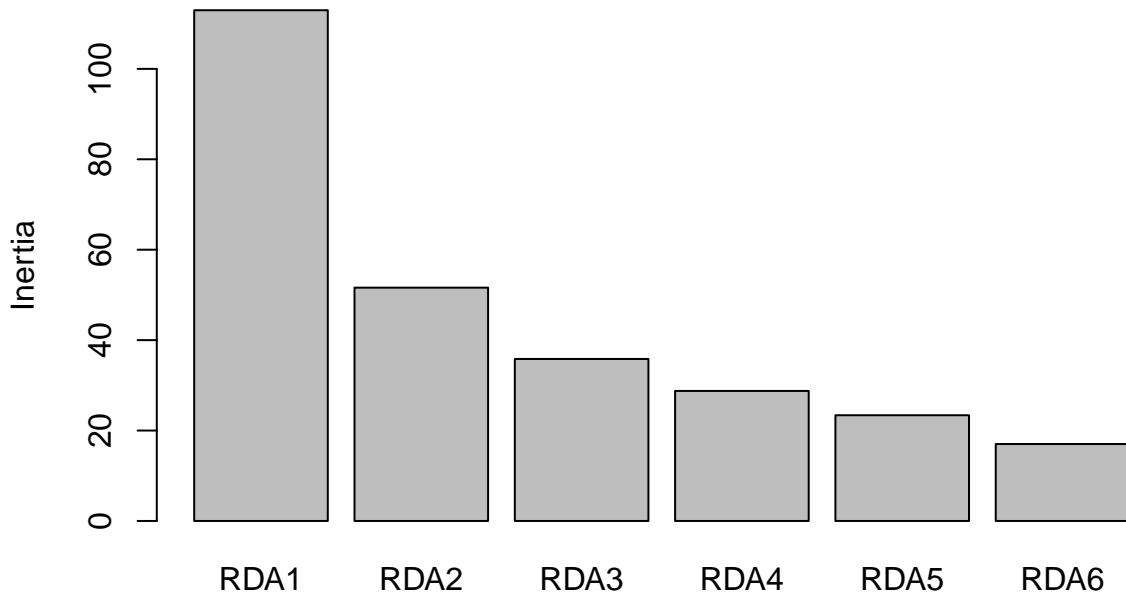
#Make sure the 6 environments correspond to the first 6 rows
summary(rdaout_geo)$biplot

##                                     RDA1      RDA2      RDA3      RDA4
## subset_indPhen_df$env1_mat    0.07702697  0.2642168  0.66800907 -0.1266427
## subset_indPhen_df$env2_MTWetQ 0.68646173  0.5948603  0.02027582  0.1467910
## subset_indPhen_df$env3_MTDQ   -0.33999937 -0.2885079  0.22407096  0.4392573
## subset_indPhen_df$env4_PDM    -0.80045183 -0.3231630 -0.10205407  0.2092156
## subset_indPhen_df$env5_PwarmQ -0.07795504 -0.2199656  0.13909133  0.1562651
## subset_indPhen_df$env6_PWM    -0.22251793 -0.6220827  0.21337431  0.1558425
##                                     RDA5      RDA6
## subset_indPhen_df$env1_mat    -0.28906048  0.33070931
## subset_indPhen_df$env2_MTWetQ  0.05597516  0.20358008
## subset_indPhen_df$env3_MTDQ   -0.21200267  0.32759539
## subset_indPhen_df$env4_PDM    0.40640717 -0.05798559
## subset_indPhen_df$env5_PwarmQ  0.26536052 -0.11892913
## subset_indPhen_df$env6_PWM    0.48760578  0.22651139

enviRDA=unlist(lapply(strsplit(rownames(rdaout_geo$CCA$biplot), "_"), function(x){x[4]}))
rdaout_geo_pred <- data.frame(matrix(NA,
                                         nrow=nrow(subset_indPhen_df),
                                         ncol=6)
)
colnames(rdaout_geo_pred) <- paste("rdageo_trait_pred", 1:6, enviRDA, sep="_")
par(mfrow=c(1,1))
a<- screeplot(rdaout_geo)

```

rdaout_geo



```
str(a)
```

```

## List of 4
## $ x : num [1:6] 0.7 1.9 3.1 4.3 5.5 6.7
## $ y : num [1:6] 113 51.6 35.8 28.8 23.4 ...
## $ xlab: NULL
## $ ylab: NULL

a$y # save this it's the eigenvalues

## [1] 112.96852 51.60726 35.83495 28.76307 23.38961 17.01966

prop_var <- round(a$y[1:6]/sum(a$y),3)
cumsum(prop_var)

## [1] 0.419 0.610 0.743 0.850 0.937 1.000

for (i in 1:6){ # hard coding here!!
  rdaout_geo_pred[,i] <- unlist(rda_trait_pred(rdaout_geo, i, 3))
}
head(rdaout_geo_pred)

##   rdageo_trait_pred_1_mat rdageo_trait_pred_2_MTWetQ rdageo_trait_pred_3_MTDQ
## 1           1.265659          0.2122223        0.05191658
## 2          -1.532662         -1.7891936        1.51704231
## 3          -1.577245          0.8289867       -1.29831242
## 4          -1.274725          1.1312103       -1.39281685
## 5          -1.813448          0.3854716       -0.62334673
## 6          -1.117529          0.6353088       -0.80838214
##   rdageo_trait_pred_4_PDM rdageo_trait_pred_5_PwarmQ rdageo_trait_pred_6_PWM
## 1          -0.1128385         -0.07459673      -0.2787735
## 2           1.7652656          1.06983283      1.2927118
## 3          -0.7214945         -1.52423656     -1.1955725
## 4          -1.4469231         -0.38399735     -0.1817642
## 5          -1.0296681          1.06834505      1.2850671
## 6          -1.0174442          0.28209085      0.4295221

subset_indPhen_df <- cbind(subset_indPhen_df, rdaout_geo_pred)

RDAbarplot[,3] <- c(
  cor(subset_indPhen_df$phenotype1_mat, subset_indPhen_df$rdageo_trait_pred_1_mat) ,
  cor(subset_indPhen_df$phenotype2_MTWetQ, subset_indPhen_df$rdageo_trait_pred_2_MTWetQ) ,
  cor(subset_indPhen_df$phenotype3_MTDQ, subset_indPhen_df$rdageo_trait_pred_3_MTDQ) ,
  cor(subset_indPhen_df$phenotype4_PDM, subset_indPhen_df$rdageo_trait_pred_4_PDM) ,
  cor(subset_indPhen_df$phenotype5_PwarmQ, subset_indPhen_df$rdageo_trait_pred_5_PwarmQ) ,
  cor(subset_indPhen_df$phenotype6_PWM, subset_indPhen_df$rdageo_trait_pred_6_PWM)
)

```

Compare with an RDA with extra (nuisance) environmental variables

```

head(ext_env)

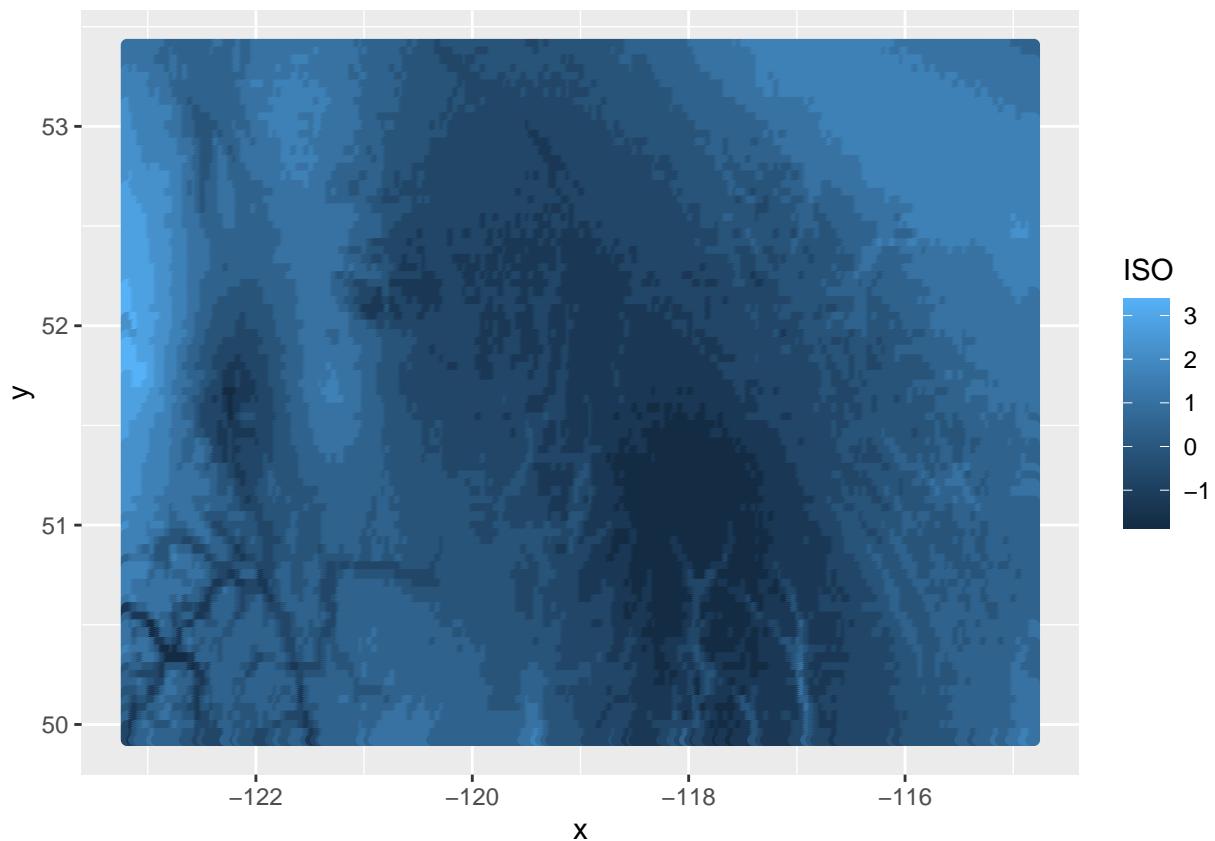
##           x      y      ISO      TSsd      PSsd      slim_x slim_y
## 360 -123.192 53.408 1.047979 1.229545 -0.16971358 0.000000000 1
## 720 -123.169 53.408 1.047979 1.229545 -0.16971358 0.002743648 1
## 1080 -123.145 53.408 1.047979 1.244671 -0.09319581 0.005606585 1
## 1440 -123.122 53.408 1.047979 1.195933 -0.24623135 0.008350233 1
## 1800 -123.099 53.408 1.047979 1.195933 -0.24623135 0.011093880 1
## 2160 -123.075 53.408 1.047979 1.162320 -0.16971358 0.013956817 1

nearest <- nn2(cbind(ext_env$slim_x, ext_env$slim_y),
                 cbind(subset_indPhen_df$x, subset_indPhen_df$y), k=1
)
head(nearest$nn.idx)

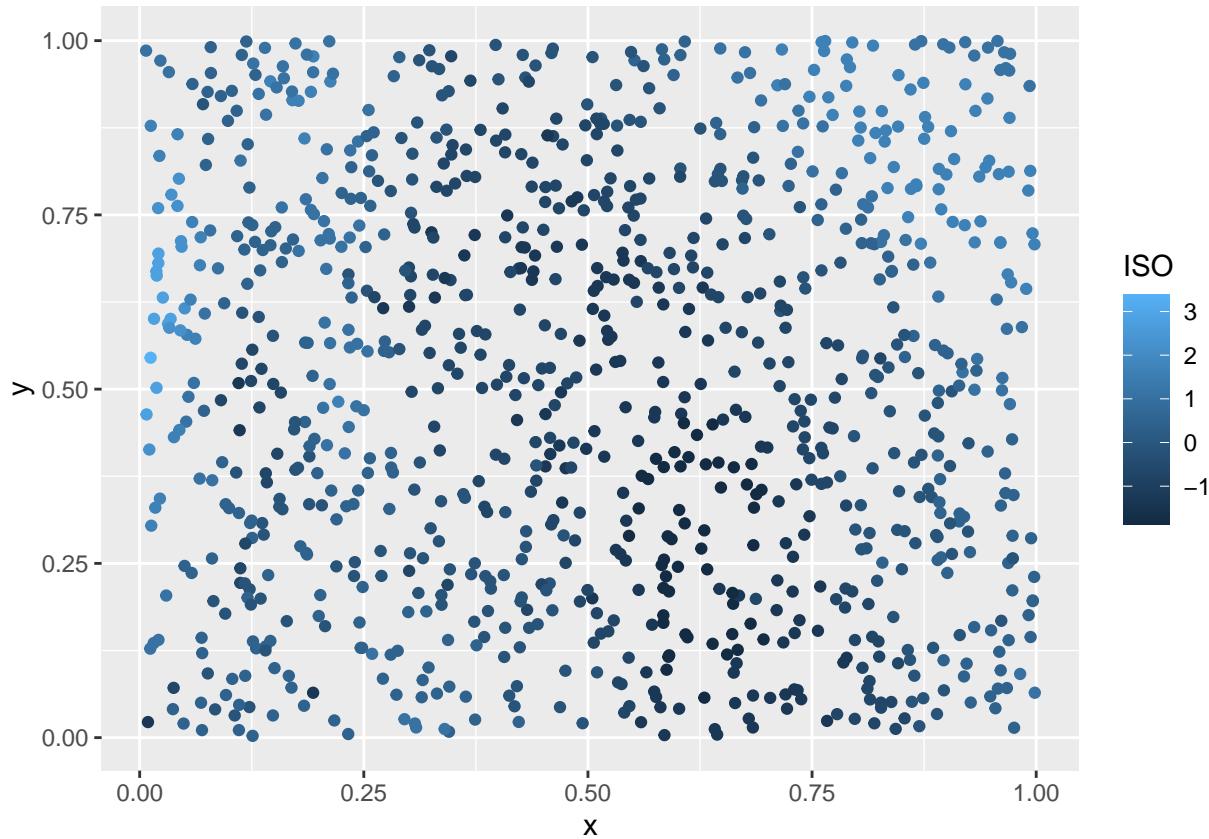
##      [,1]
## [1,] 99147
## [2,] 21034
## [3,] 54242
## [4,] 86767
## [5,] 113426
## [6,] 99052

subset_indPhen_df$ISO <- ext_env$ISO[unlist(nearest$nn.idx)]
subset_indPhen_df$TSsd <- ext_env$TSsd[unlist(nearest$nn.idx)]
subset_indPhen_df$PSsd <- ext_env$PSsd[unlist(nearest$nn.idx)]
# sanity check
ggplot(ext_env) + geom_point( aes(x=x, y=y, color=ISO))

```



```
ggplot(subset_indPhen_df) + geom_point( aes(x=x, y=y, color=ISO))
```



```
nrow(subset_indPhen_df)
```

```
## [1] 1000
```

```
rdaout_nuisance <- rda(t(G_full_subset) ~ subset_indPhen_df$env1_mat +
  subset_indPhen_df$env2_MTWetQ +
  subset_indPhen_df$env3_MTDQ +
  subset_indPhen_df$env4_PDM +
  subset_indPhen_df$env5_PwarmQ +
  subset_indPhen_df$env6_PWM +
  subset_indPhen_df$ISO +
  subset_indPhen_df$TSsd +
  subset_indPhen_df$PSsd
)
```

#Make sure the 6 environments correspond to the first 6 rows

```
summary(rdaout_nuisance)$biplot
```

	RDA1	RDA2	RDA3	RDA4
## subset_indPhen_df\$env1_mat	-0.4841737	-0.08542268	0.52415981	-0.19047903
## subset_indPhen_df\$env2_MTWetQ	0.4105796	0.25620125	0.77527941	0.31011928
## subset_indPhen_df\$env3_MTDQ	-0.6635284	-0.34612035	-0.07252447	-0.42391086
## subset_indPhen_df\$env4_PDM	-0.3618954	-0.02780810	-0.81790058	-0.03818407
## subset_indPhen_df\$env5_PwarmQ	0.5851695	0.61968501	-0.39849076	-0.18059636
## subset_indPhen_df\$env6_PWM	0.3263428	-0.01388219	-0.65324989	-0.34196883
## subset_indPhen_df\$ISO	0.3183630	0.27913342	0.67174810	-0.16274840

```

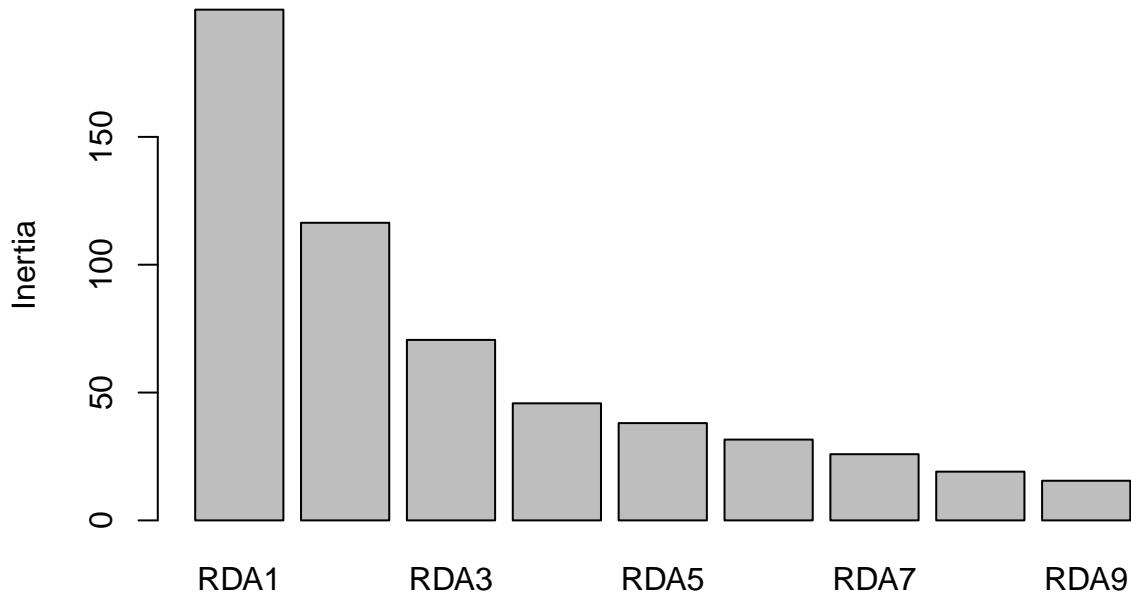
## subset_indPhen_df$TSsd      0.4677180  0.39870866  0.26604537  0.11608919
## subset_indPhen_df$PSsd      0.8270525 -0.02497442  0.28433529 -0.28791998
##
## RDA5          RDA6
## subset_indPhen_df$env1_mat   0.46495364  0.3264659
## subset_indPhen_df$env2_MTWetQ 0.03378808  0.1618875
## subset_indPhen_df$env3_MTDQ   -0.09766830  0.2427134
## subset_indPhen_df$env4_PDM    -0.18799625  0.1364502
## subset_indPhen_df$env5_PwarmQ -0.01594835  0.1818523
## subset_indPhen_df$env6_PWM     -0.06449325  0.3270316
## subset_indPhen_df$ISO        -0.37716932  0.2458212
## subset_indPhen_df$TSsd       0.35116955  0.3673550
## subset_indPhen_df$PSsd       0.12424421  0.2626120

rdaout_nuis_pred <- data.frame(matrix(NA,
                                         nrow=nrow(subset_indPhen_df),
                                         ncol=6)
)
enviRDA=unlist(lapply(strsplit(rownames(rdaout_nuisance$CCA$biplot), " "), function(x){x[4]}))

colnames(rdaout_nuis_pred)[1:6] <- paste("rdanuis_trait_pred", 1:6, enviRDA[1:6], sep="_")
a<- screeplot(rdaout_nuisance)

```

rdaout_nuisance



```
str(a)
```

```

## List of 4
## $ x : num [1:9] 0.7 1.9 3.1 4.3 5.5 6.7 7.9 9.1 10.3
## $ y : num [1:9] 199.8 116.4 70.6 45.8 38.1 ...
## $ xlab: NULL
## $ ylab: NULL

```

```

a$y # save this it's the eigenvalues

## [1] 199.75935 116.40489 70.59256 45.78459 38.05450 31.60225 25.88722
## [8] 19.06714 15.51295

prop_var <- round(a$y[1:6]/sum(a$y),3)
cumsum(prop_var)

## [1] 0.355 0.562 0.687 0.768 0.836 0.892

#could argue to do K=4 here

for (i in 1:6){ # hard coding here!
  rdaout_nuis_pred[,i] <- unlist(rda_trait_pred(rdaout_nuisance, i, 4))
}
head(rdaout_nuis_pred)

##   rdanuis_trait_pred_1_mat rdanuis_trait_pred_2_MTWetQ
## 1          0.6084923      -0.48850524
## 2          0.4491354      -1.02180438
## 3         -1.4364204       1.24265894
## 4          0.1769093      -0.07063134
## 5          0.8207876      -0.82251301
## 6          0.7748457      -0.52743763
##   rdanuis_trait_pred_3_MTDQ rdanuis_trait_pred_4_PDM
## 1          0.6877259       0.2667669
## 2          0.6462775       1.3772785
## 3         -1.5623358      -0.9360098
## 4          0.2656366      -0.3280166
## 5          1.1626054      -0.1237131
## 6          0.9434404      -0.2093697
##   rdanuis_trait_pred_5_PwarmQ rdanuis_trait_pred_6_PWM
## 1          -0.9570092     -0.57886131
## 2          0.1953538      -0.08801275
## 3          1.3851335       0.98984606
## 4          -0.5985907     -0.04442089
## 5          -1.2775622      0.02037090
## 6          -1.2670569     -0.31401065

subset_indPhen_df <- cbind(subset_indPhen_df, rdaout_nuis_pred)

RDAbarplot[,2] <- c(
  cor(subset_indPhen_df$phenotype1_mat, subset_indPhen_df$rdanuis_trait_pred_1_mat) ,
  cor(subset_indPhen_df$phenotype2_MTWetQ, subset_indPhen_df$rdanuis_trait_pred_2_MTWetQ),
  cor(subset_indPhen_df$phenotype3_MTDQ, subset_indPhen_df$rdanuis_trait_pred_3_MTDQ) ,
  cor(subset_indPhen_df$phenotype4_PDM, subset_indPhen_df$rdanuis_trait_pred_4_PDM) ,
  cor(subset_indPhen_df$phenotype5_PwarmQ, subset_indPhen_df$rdanuis_trait_pred_5_PwarmQ),
  cor(subset_indPhen_df$phenotype6_PWM, subset_indPhen_df$rdanuis_trait_pred_6_PWM)
)

```

PCA

```
write.table(t(G_full_subset), paste0(seed, "genotypes.txt"), row.names=FALSE)

lfmmfile <- paste0(seed, "_genotypes.lfmm")

write.lfmm(t(G_full_subset), lfmmfile)

## [1] "892657863_genotypes.lfmm"

#dim(rbind(subset_indPhen_df$ind_index, t(G_full_subset)))

pc = pca(lfmmfile, 20, scale = TRUE)

## [1] "*****"
## [1] " Principal Component Analysis "
## [1] "*****"
## summary of the options:
##
##      -n (number of individuals)      1000
##      -L (number of loci)            26371
##      -K (number of principal components) 20
##      -x (genotype file)           /Users/lotterhos/Documents/GitHub/MVP-NonClinalAF/multip
##      -a (eigenvalue file)          /Users/lotterhos/Documents/GitHub/MVP-NonClinalAF/multip
##      -e (eigenvector file)         /Users/lotterhos/Documents/GitHub/MVP-NonClinalAF/multip
##      -d (standard deviation file) /Users/lotterhos/Documents/GitHub/MVP-NonClinalAF/multip
##      -p (projection file)         /Users/lotterhos/Documents/GitHub/MVP-NonClinalAF/multip
##      -s data centered and scaled

#saveRDS(pc,paste0(path, seed, "_pca.RDS"))
print("calculated pca")

## [1] "calculated pca"

str(pc)

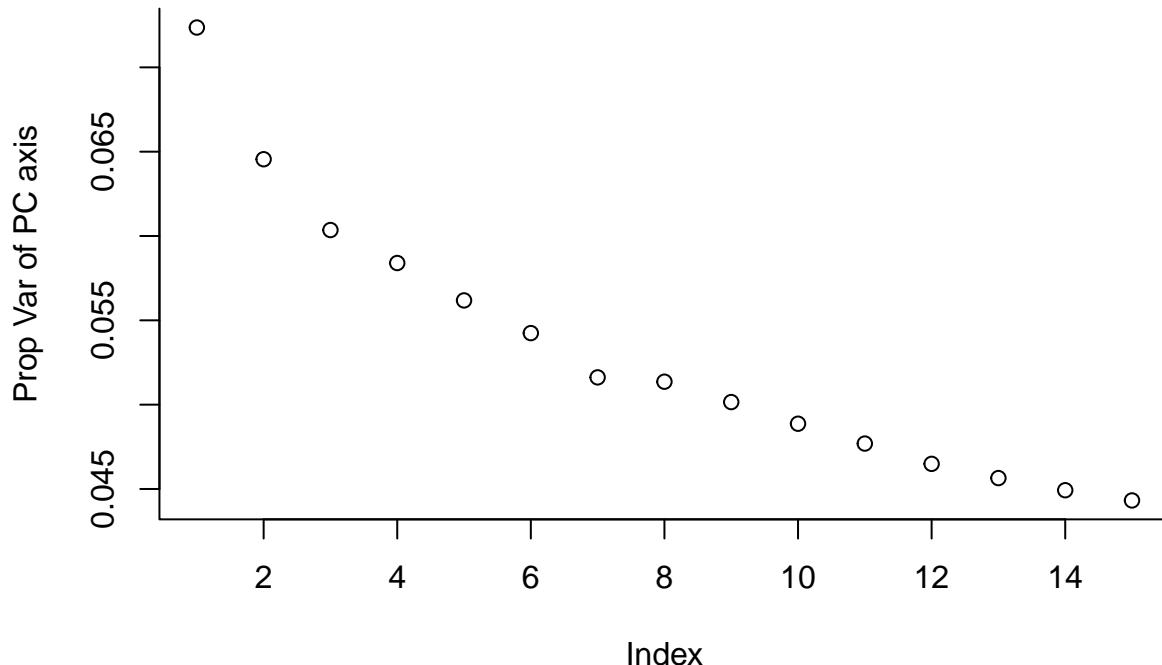
## Formal class 'pcaProject' [package "LEA"] with 13 slots
##   ..@ projDir       : chr "/Users/lotterhos/Documents/GitHub/MVP-NonClinalAF/multiphenomultienvi/"
##   ..@ pcaDir        : chr "892657863_genotypes.pca/"
##   ..@ n             : int 1000
##   ..@ L             : int 26371
##   ..@ K             : int 20
##   ..@ center        : logi TRUE
##   ..@ scale          : logi TRUE
##   ..@ pcaProject.file : chr "892657863_genotypes.pcaProject"
##   ..@ input.file     : chr "892657863_genotypes.lfmm"
##   ..@ eigenvalue.file : chr "892657863_genotypes.eigenvalues"
##   ..@ eigenvector.file: chr "892657863_genotypes.eigenvectors"
##   ..@ sdev.file      : chr "892657863_genotypes.sdev"
##   ..@ projection.file : chr "892657863_genotypes.projections"
```

```

subset_indPhen_df$PC1 <- pc$projections[,1]
subset_indPhen_df$PC2 <- pc$projections[,2]
subset_indPhen_df$PC3 <- pc$projections[,3]
propvarpc <- pc$sdev[1:15]/sum(pc$sdev)
plot(propvarpc, bty="l", ylab="Prop Var of PC axis",
     main=paste0(plotmain, "; K=", 20), cex.main=0.5)

```

Mutivariate simulation; K=20



```

pdf("plots_PCA.pdf", width=5, height=4)
ggplot(subset_indPhen_df) + geom_point(aes(x=PC1, y=PC2, color=x), size=5) +
  scale_color_viridis(option="magma") +
  geom_point(aes(x=PC1, y=PC2, fill=y), size=2, pch=21) + ggtheme +
  scale_fill_viridis(option="mako")
dev.off()

```

```

## pdf
## 2

```

Compare with an RDA conditioned on PC axes

```

rdaout_PC <- rda(t(G_full_subset) ~ subset_indPhen_df$env1_mat +
  subset_indPhen_df$env2_MTWetQ +
  subset_indPhen_df$env3_MTDQ +
  subset_indPhen_df$env4_PDM +
  subset_indPhen_df$env5_PwarmQ +
  subset_indPhen_df$env6_PWM +
  Condition(subset_indPhen_df$PC1 + subset_indPhen_df$PC2)

```

```

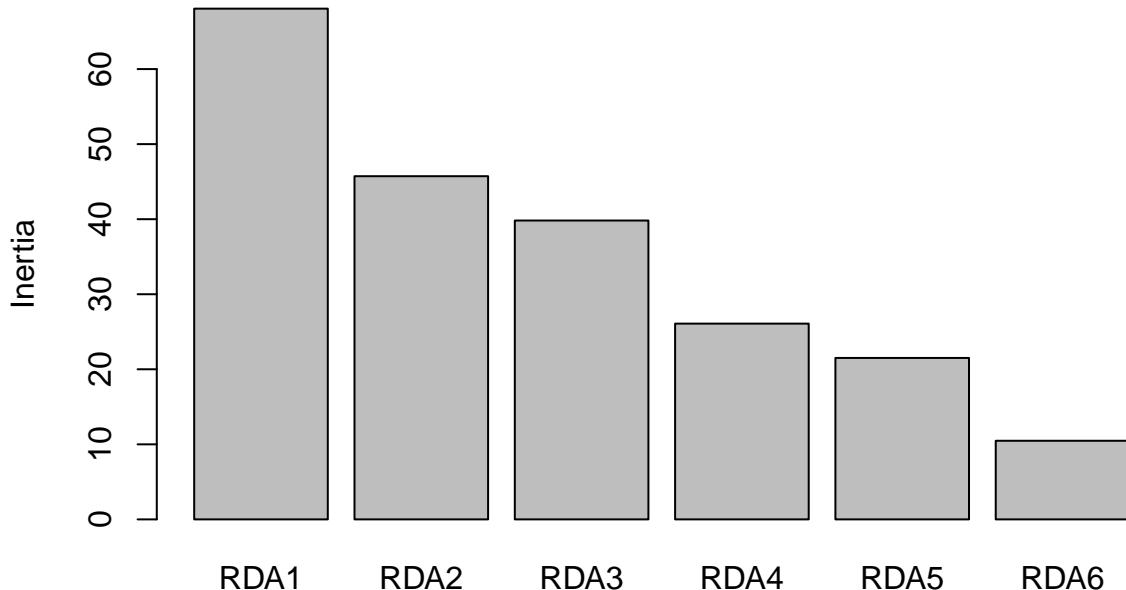
)
#Make sure the 6 environments correspond to the first 6 rows
summary(rdaout_PC)$biplot

##                                     RDA1        RDA2        RDA3        RDA4
## subset_indPhen_df$env1_mat    -0.5245376 -0.02602815  0.53762964 -0.03502722
## subset_indPhen_df$env2_MTWetQ -0.8355882 -0.10039282 -0.17111890  0.16471284
## subset_indPhen_df$env3_MTDQ   0.1598580  0.36303218  0.33114690  0.47960365
## subset_indPhen_df$env4_PDM    0.8539226 -0.17647528 -0.15941117  0.23489663
## subset_indPhen_df$env5_PwarmQ 0.4164786 -0.35392980  0.09531554  0.19306406
## subset_indPhen_df$env6_PWM    0.6698288 -0.06505497  0.33098469  0.24950964
##                                     RDA5        RDA6
## subset_indPhen_df$env1_mat    -0.03389235 -0.488585809
## subset_indPhen_df$env2_MTWetQ  0.17138814 -0.041821956
## subset_indPhen_df$env3_MTDQ   -0.04034418 -0.220134703
## subset_indPhen_df$env4_PDM    0.19600377 -0.007685675
## subset_indPhen_df$env5_PwarmQ 0.13994570  0.099504427
## subset_indPhen_df$env6_PWM    0.52471022  0.049321000

enviRDA=unlist(lapply(strsplit(rownames(rdaout_PC$CCA$biplot), " "), function(x){x[4]}))
rdaout_pc_pred <- data.frame(matrix(NA,
                                         nrow=nrow(subset_indPhen_df),
                                         ncol=6))
)
colnames(rdaout_pc_pred) <- paste("rdapc_trait_pred", 1:6, enviRDA, sep="_")
a<- screeplot(rdaout_PC)

```

rdaout_PC



```

str(a)

## List of 4
## $ x : num [1:6] 0.7 1.9 3.1 4.3 5.5 6.7
## $ y : num [1:6] 68.1 45.7 39.8 26.1 21.5 ...
## $ xlab: NULL
## $ ylab: NULL

a$y # save this it's the eigenvalues

## [1] 68.05155 45.72809 39.82016 26.08374 21.50990 10.47522

prop_var <- round(a$y[1:6]/sum(a$y),3)
cumsum(prop_var)

## [1] 0.322 0.538 0.726 0.849 0.951 1.000

for (i in 1:6){ # hard coding here!
  rdaout_pc_pred[,i] <- unlist(rda_trait_pred(rdaout_PC, i, 3))
}
head(rdaout_pc_pred)

##   rdapc_trait_pred_1_mat rdapc_trait_pred_2_MTWetQ rdapc_trait_pred_3_MTDQ
## 1          0.88799537      0.51204838     -0.3994751
## 2         -1.26072461     -1.36012051      0.8169536
## 3        -1.98748441     -0.12348776     -1.1113356
## 4         0.08886399      0.14199912      0.7654236
## 5         0.11644354     -0.64282865      3.3399573
## 6         0.45251146      0.04301893      1.7590482
##   rdapc_trait_pred_4_PDM rdapc_trait_pred_5_PwarmQ rdapc_trait_pred_6_PWM
## 1        -0.4898052       0.07987374     -0.2309161
## 2         1.2658767       0.82945601      1.1936669
## 3         0.7224157     -0.20814359     -0.4676039
## 4        -0.4182877     -0.91134576     -0.3645721
## 5        -0.4881793     -1.83352153      0.1364665
## 6        -0.6946252     -1.38421794     -0.3045637

subset_indPhen_df <- cbind(subset_indPhen_df, rdaout_pc_pred)

RDAbarplot

##           RDA RDA + nuisance env. pRDA - geography pRDA - PCs
## MAT      0.6461756      0.6531884      0.5949827      NA
## MTWetQ  0.8066352      0.8042168      0.7933902      NA
## MTDQ    0.7152864      0.7511792      0.4388215      NA
## PDM     0.7366390      0.7343335      0.7633153      NA
## PwarmQ 0.8571310      0.8535961      0.2527603      NA
## PWM     0.6190757      0.6315349      0.6415677      NA

```

```

RDAbarplot[,4] <- c(
  cor(subset_indPhen_df$phenotype1_mat, subset_indPhen_df$rdapc_trait_pred_1_mat) ,
  cor(subset_indPhen_df$phenotype2_MTWetQ, subset_indPhen_df$rdapc_trait_pred_2_MTWetQ) ,
  cor(subset_indPhen_df$phenotype3_MTDQ, subset_indPhen_df$rdapc_trait_pred_3_MTDQ) ,
  cor(subset_indPhen_df$phenotype4_PDM, subset_indPhen_df$rdapc_trait_pred_4_PDM) ,
  cor(subset_indPhen_df$phenotype5_PwarmQ, subset_indPhen_df$rdapc_trait_pred_5_PwarmQ) ,
  cor(subset_indPhen_df$phenotype6_PWM, subset_indPhen_df$rdapc_trait_pred_6_PWM)
)

head(subset_indPhen_df)

##          seed ind_index      x      y phenotype1_mat phenotype2_MTWetQ
## 34 892657863      33 0.4061840 0.233272    0.7379670 -0.1914210
## 35 892657863      34 0.4256970 0.837158   -0.2740810 -0.4283320
## 45 892657863      44 0.6716730 0.581744   -0.6763260  0.0866287
## 46 892657863      45 0.0174659 0.329922   -0.2832210 -0.4039420
## 47 892657863      46 0.0697436 0.121221    0.0576163 -0.3032010
## 65 892657863      64 0.1433610 0.233237    0.2656280 -0.2318730
## phenotype3_MTDQ phenotype4_PDM phenotype5_PwarmQ phenotype6_PWM env1_mat
## 34      0.142992     -0.131894     -0.452497    -0.5416510  0.762432
## 35     -0.012880      0.221058      0.229296     0.0665969 -0.339330
## 45     -0.470671      0.218813      0.260098    -0.1034650 -0.567733
## 46     -0.333718     -0.200554     -0.345915    -0.4100010 -0.245860
## 47      0.731600      0.195679     -0.367110     0.1962960 -0.121500
## 65      0.214004     -0.239776     -0.517086    -0.2582660  0.103057
## env2_MTWetQ env3_MTDQ env4_PDM env5_PwarmQ env6_PWM indID subset
## 34     -0.1622380    0.2612810   -0.332078   -0.471502 -0.4778210  34  TRUE
## 35     -0.4076670   -0.0582962    0.288030    0.198810  0.0176800  35  TRUE
## 45      0.0909278   -0.4143530    0.234899    0.230255 -0.0535109  45  TRUE
## 46     -0.2007590   -0.2674550   -0.265260   -0.389828 -0.4589790  46  TRUE
## 47     -0.3063790    0.7028580    0.211275   -0.352307  0.2127510  47  TRUE
## 65     -0.2863170    0.1657060   -0.190813   -0.476650 -0.2927740  65  TRUE
##          RDA1        RDA2        RDA3        RDA4 rda_trait_pred_1_mat
## 34     -0.86430581  -0.9166130  -0.6236796  0.42815736  0.71113715
## 35     -1.10493855  2.1694436  1.4839047  0.38699170  0.38110458
## 45      1.89569056  0.2790137  0.3473426 -3.35012341 -1.32666788
## 46      0.09261835 -1.9084997 -0.2064070  0.01068788 -0.03435832
## 47     -0.42193942 -3.1656751  0.1950282  2.89261642  0.18559815
## 65     -0.48972800 -2.6743048 -0.4102364  1.53197385  0.38850483
##          rda_trait_pred_2_MTWetQ rda_trait_pred_3_MTDQ rda_trait_pred_4_PDM
## 34      -0.4338363      0.7276325  0.196319735
## 35      -0.9983652      0.6003877  1.415511759
## 45       1.1149832     -1.4179971 -0.961392116
## 46      -0.1385528      0.1677459 -0.227134452
## 47      -0.8204453      0.7258162  0.207786435
## 65      -0.5419195      0.6864266 -0.003682457
##          rda_trait_pred_5_PwarmQ rda_trait_pred_6_PWM rdageo_trait_pred_1_mat
## 34      -0.9832306     -0.696169112  1.265659
## 35       0.1857819     -0.058610158 -1.532662
## 45       1.4354370      1.166263029 -1.577245
## 46      -0.5810013      0.051708655 -1.274725
## 47      -1.2668857      0.006861397 -1.813448
## 65     -1.2553170     -0.316284936 -1.117529

```

```

##      rdageo_trait_pred_2_MTWetQ rdageo_trait_pred_3_MTDQ rdageo_trait_pred_4_PDM
## 34          0.2122223          0.05191658         -0.1128385
## 35         -1.7891936          1.51704231          1.7652656
## 45          0.8289867         -1.29831242         -0.7214945
## 46          1.1312103         -1.39281685         -1.4469231
## 47          0.3854716         -0.62334673         -1.0296681
## 65          0.6353088         -0.80838214         -1.0174442
##      rdageo_trait_pred_5_PwarmQ rdageo_trait_pred_6_PWM      ISO      TSsd
## 34         -0.07459673        -0.2787735 -0.1204440  0.7690523
## 35          1.06983283        1.2927118 -0.7046553 -0.9250244
## 45         -1.52423656        -1.1955725 -0.7046553 -0.7821707
## 46         -0.38399735        -0.1817642  1.6321899 -1.4477009
## 47          1.06834505        1.2850671  0.4637673 -2.1014666
## 65          0.28209085        0.4295221  0.4637673 -1.3821563
##      PSsd rdanuis_trait_pred_1_mat rdanuis_trait_pred_2_MTWetQ
## 34 -0.5523024          0.6084923         -0.48850524
## 35 -1.0114091          0.4491354         -1.02180438
## 45 -0.7818557         -1.4364204          1.24265894
## 46 -0.4757847          0.1769093         -0.07063134
## 47  0.2128753          0.8207876         -0.82251301
## 65 -0.4757847          0.7748457         -0.52743763
##      rdanuis_trait_pred_3_MTDQ rdanuis_trait_pred_4_PDM
## 34          0.6877259          0.2667669
## 35          0.6462775          1.3772785
## 45         -1.5623358         -0.9360098
## 46          0.2656366         -0.3280166
## 47          1.1626054         -0.1237131
## 65          0.9434404         -0.2093697
##      rdanuis_trait_pred_5_PwarmQ rdanuis_trait_pred_6_PWM      PC1      PC2
## 34         -0.9570092        -0.57886131   9.029300 -27.7954
## 35          0.1953538        -0.08801275  34.415600  35.0493
## 45          1.3851335          0.98984606 -38.264700  20.2608
## 46         -0.5985907        -0.04442089 -3.625160 -20.9956
## 47         -1.2775622          0.02037090  0.371336 -31.5880
## 65         -1.2670569        -0.31401065  1.326080 -38.0916
##      PC3 rdapc_trait_pred_1_mat rdapc_trait_pred_2_MTWetQ
## 34 -0.167126          0.88799537         0.51204838
## 35 -48.397000         -1.26072461         -1.36012051
## 45 -7.927330         -1.98748441         -0.12348776
## 46  9.732080          0.08886399          0.14199912
## 47  8.717150          0.11644354         -0.64282865
## 65 16.684200          0.45251146          0.04301893
##      rdapc_trait_pred_3_MTDQ rdapc_trait_pred_4_PDM rdapc_trait_pred_5_PwarmQ
## 34         -0.3994751        -0.4898052         0.07987374
## 35          0.8169536          1.2658767         0.82945601
## 45         -1.1113356          0.7224157         -0.20814359
## 46          0.7654236         -0.4182877         -0.91134576
## 47          3.3399573         -0.4881793         -1.83352153
## 65          1.7590482         -0.6946252         -1.38421794
##      rdapc_trait_pred_6_PWM
## 34          -0.2309161
## 35          1.1936669
## 45         -0.4676039
## 46         -0.3645721

```

```

## 47          0.1364665
## 65         -0.3045637

forcor <- subset_indPhen_df[,c(
  which(colnames(subset_indPhen_df)=="x"),
  which(colnames(subset_indPhen_df)=="y"),
  grep("PC1", colnames(subset_indPhen_df)),
  grep("PC2", colnames(subset_indPhen_df)),
  grep("env", colnames(subset_indPhen_df))
)
]

pdf("plots_env_PCCors.pdf", width=7, height=5)
  corrplot(abs(cor(forcor)), type = "upper")
dev.off()

## pdf
## 2

```

RDAbarplot

```

colrs <- c(rocket(2, begin=0, end=0.3), rocket(2, begin=0.9, end=1.0))

pdf("plots_RDApred.pdf", width=6, height=6)
par(mar=c(5,5,1,1))
  barplot(t(RDAbarplot), beside = TRUE, las=2, ylim=c(0,1.05), ylab="Cor(RDA-predicted trait value,\n"
  legend(1.0,1.05,colnames(RDAbarplot), bty="n", fill= colrs)
dev.off()

## pdf
## 2

```