

22 Fall S670 Mini presentation

PCA basic concepts and steps

Step 1 - Normalizing Data Due to the varied scales of this information, conducting PCA with such data could result in biased outcomes. This is where data normalization becomes crucial. It ensures that each attribute contributes equally, preventing the dominance of one variable over others. For each variable, normalization involves subtracting its mean and dividing by its standard deviation. Also, PCA only operates for numerical values.

Step 2 - Computing Covariance Matrix As the name implies, this step involves calculating the covariance matrix from the normalized data. This symmetric matrix assigns each element (i, j) to the covariance between variables i and j.

Step 3 - Eigenvectors and Eigenvalues In geometric terms, an eigenvector denotes a direction, such as “vertical” or “90 degrees.” Conversely, an eigenvalue is a numerical representation of the variance present in the data for a specific direction. Each eigenvector corresponds to a unique eigenvalue.

Step 4 - Selecting Principal Components The number of pairs of eigenvectors and eigenvalues matches the number of variables in the data. In the case of data comprising only monthly expenses, age, and rating, there will be three pairs. However, not all pairs are relevant. The eigenvector with the highest eigenvalue corresponds to the first principal component, the second principal component aligns with the eigenvector possessing the second highest eigenvalue, and so forth.

Step 5 - Transforming Data in a New Dimensional Space This step involves repositioning the original data into a new subspace defined by the principal components. This reorientation is achieved by multiplying the original data by the previously computed eigenvectors.

It’s crucial to note that this transformation doesn’t alter the original data but instead provides a new perspective for better data representation.

```
mc <- read.csv("menu.csv")
# https://www.kaggle.com/datasets/mcdonalds/nutrition-facts/ <- data reference site
head(mc)
```

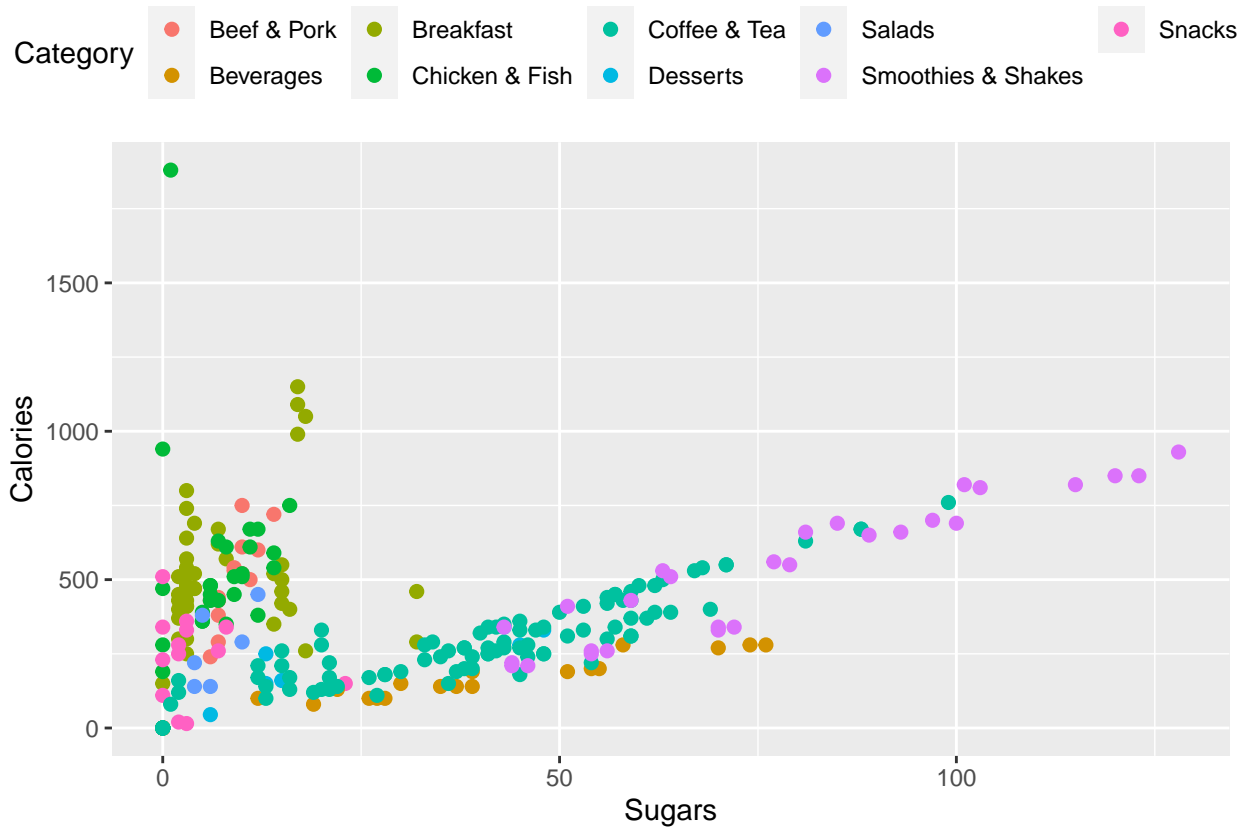
##	Category	Item	Serving.Size	Calories
## 1	Breakfast	Egg McMuffin	4.8 oz (136 g)	300
## 2	Breakfast	Egg White Delight	4.8 oz (135 g)	250
## 3	Breakfast	Sausage McMuffin	3.9 oz (111 g)	370
## 4	Breakfast	Sausage McMuffin with Egg	5.7 oz (161 g)	450
## 5	Breakfast	Sausage McMuffin with Egg Whites	5.7 oz (161 g)	400
## 6	Breakfast	Steak & Egg McMuffin	6.5 oz (185 g)	430
##	Calories.from.Fat	Total.Fat	Total.Fat....Daily.Value.	Saturated.Fat
## 1	120	13	20	5
## 2	70	8	12	3
## 3	200	23	35	8
## 4	250	28	43	10
## 5	210	23	35	8
## 6	210	23	36	9
##	Saturated.Fat....Daily.Value.	Trans.Fat	Cholesterol	
## 1	25	0	260	
## 2	15	0	25	
## 3	42	0	45	
## 4	52	0	285	
## 5	42	0	50	
## 6	46	1	300	

```
## Cholesterol....Daily.Value. Sodium Sodium....Daily.Value. Carbohydrates
## 1      87      750      31      31
## 2      8      770      32      30
## 3     15      780      33      29
## 4     95      860      36      30
## 5     16      880      37      30
## 6    100      960      40      31
## Carbohydrates....Daily.Value. Dietary.Fiber Dietary.Fiber....Daily.Value.
## 1      10      4      17
## 2      10      4      17
## 3      10      4      17
## 4      10      4      17
## 5      10      4      17
## 6      10      4      18
## Sugars Protein Vitamin.A....Daily.Value. Vitamin.C....Daily.Value.
## 1      3      17      10      0
## 2      3      18      6      0
## 3      2      14      8      0
## 4      2      21     15      0
## 5      2      21      6      0
## 6      3      26     15      2
## Calcium....Daily.Value. Iron....Daily.Value.
## 1      25      15
## 2      25      8
## 3      25     10
## 4      30     15
## 5      25     10
## 6      30     20
```

```
##EDA work
```

```
library(ggplot2)

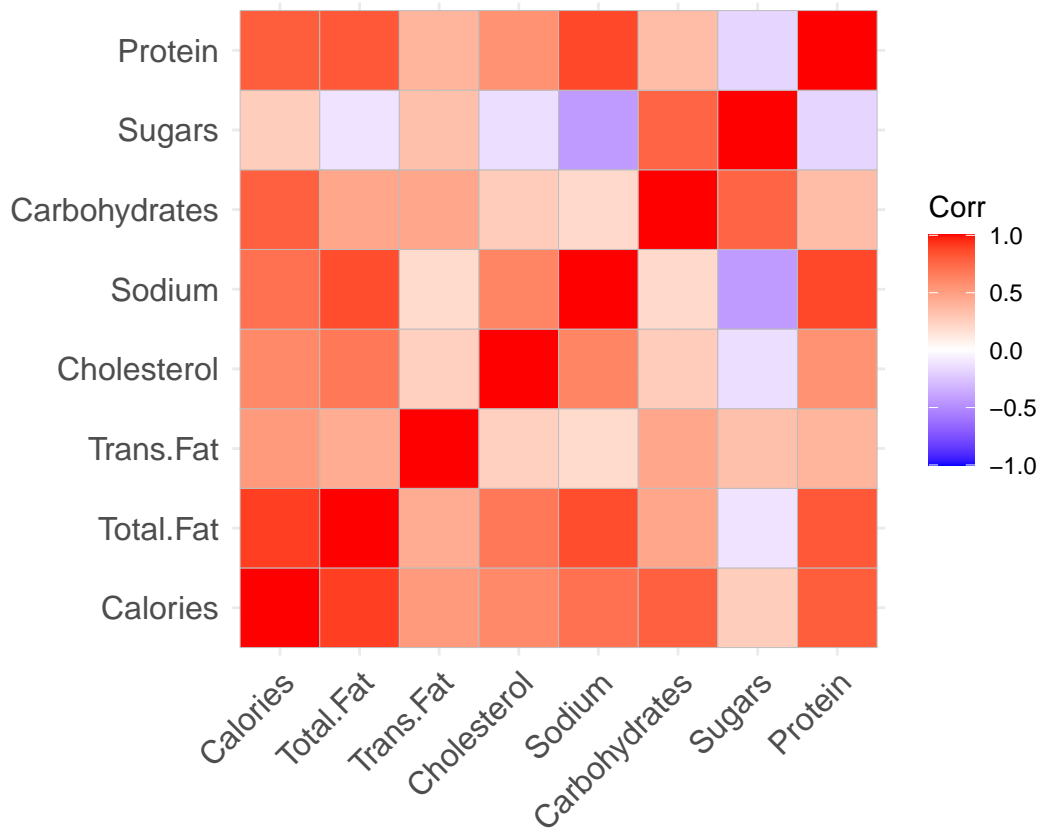
ggplot(mc, aes(x = Sugars, y = Calories, group=Category))+
  geom_point(aes( color=Category), size=2)+
  theme(legend.position="top")
```



Calculate the Correlation Matrix While the covariance matrix is discussed in the preceding five steps, utilizing the correlation matrix is also a viable option. The correlation matrix can be computed using the `cor()` function from the `corr` package. For improved visualization, the `ggcorrplot()` function can then be applied.

```
library(ggcorrplot)
library("FactoMineR")
mc2 <- mc[ c(4,6,10,11,13, 15,19,20)]

cormatrix <- cor(mc2)
ggcorrplot(cormatrix)
```

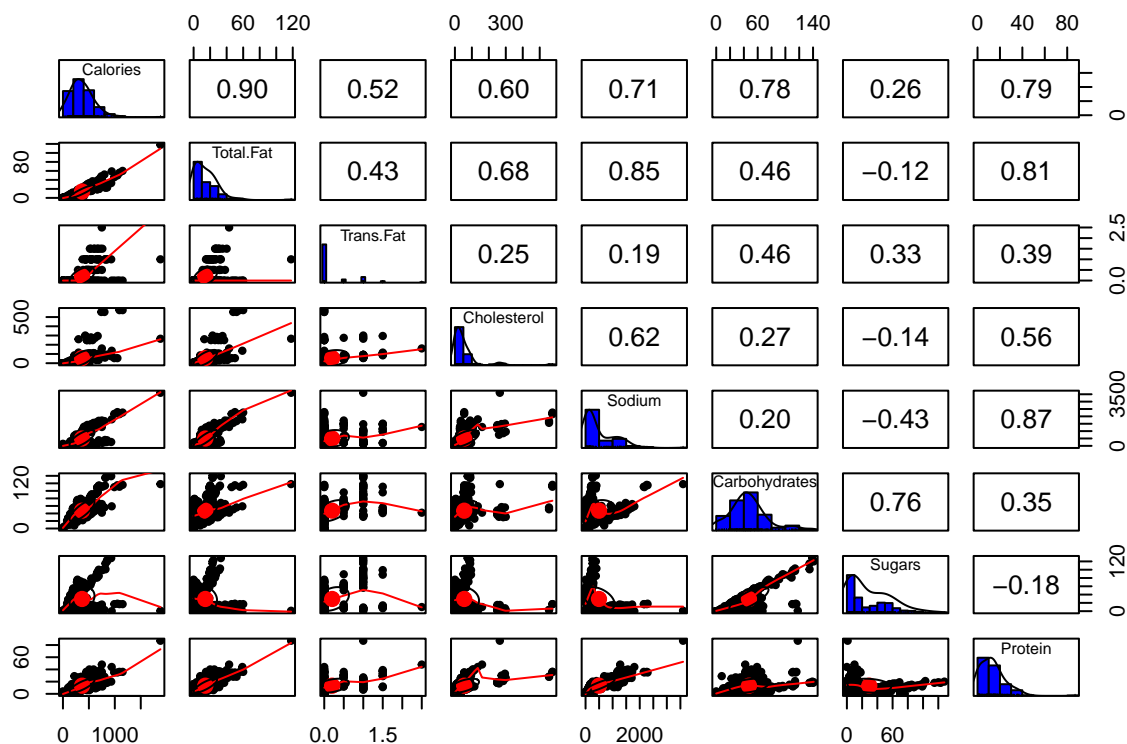


```
library(psych)
```

```
##
## Attaching package: 'psych'
```

```
## The following objects are masked from 'package:ggplot2':
##
##    %+%, alpha
```

```
#correlation ellipses
pairs.panels(mc2,
  method = "pearson",
  hist.col = "blue",
  density = TRUE,
  ellipses = TRUE
)
```



```
library(ggplot2)
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##   filter, lag
```

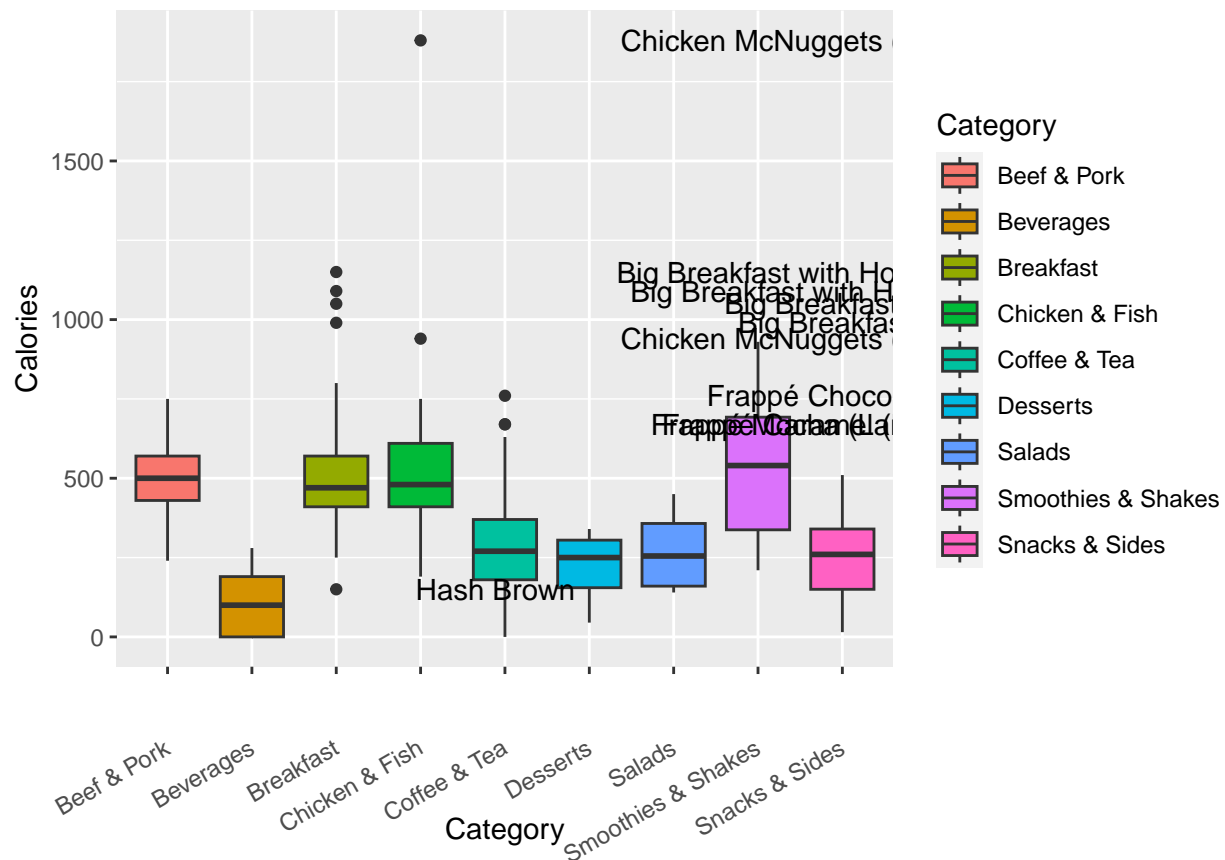
```
## The following objects are masked from 'package:base':
##
##   intersect, setdiff, setequal, union
```

```
findout_outlier <- function(x) {
  return(x < quantile(x, .25) - 1.5*IQR(x) | x > quantile(x, .75) + 1.5*IQR(x))
}
```

```
mc <- mc |>
  group_by(Category) |>
  mutate(outlier = ifelse(findout_outlier(Calories), Item, NA))

ggplot(mc, aes(x=Category, y=Calories, fill=Category)) +
```

```
geom_boxplot() +
geom_text(aes(label=outlier), na.rm=TRUE, hjust=-.5)+ theme(axis.text.x = element_text(angle = 30, vj
```



##Application of PCA

```
pca2 <- princomp(cormatrix)
summary(pca2)
```

```
## Importance of components:
##              Comp.1    Comp.2    Comp.3    Comp.4    Comp.5
## Standard deviation  0.8691245 0.3118991 0.22562616 0.16235323 0.057073143
## Proportion of Variance 0.8088587 0.1041686 0.05451144 0.02822478 0.003487967
## Cumulative Proportion 0.8088587 0.9130274 0.96753880 0.99576358 0.999251550
##              Comp.6    Comp.7    Comp.8
## Standard deviation  0.0262993664 2.702974e-03 0
## Proportion of Variance 0.0007406266 7.823347e-06 0
## Cumulative Proportion 0.9999921767 1.000000e+00 1
```

```
pca2$loadings[, 1:2]
```

```
##              Comp.1    Comp.2
## Calories      0.17599720 0.49572164
## Total.Fat     0.36849871 0.32891757
## Trans.Fat    -0.07434164 0.24858213
## Cholesterol   0.32505965 -0.07624046
```

```
## Sodium      0.51210669  0.13721298
## Carbohydrates -0.20596390  0.58651537
## Sugars      -0.51205970  0.40231295
## Protein     0.39390825  0.23191425
```

explanation for summary of the ‘pca’

Each principal component accounts for a percentage of the total variance within the dataset. In the Cumulative Proportion section, the first principal component elucidates almost 80% of the total variance. This signifies that nearly three-quarters of the data across the set of 9 variables can be encapsulated by the first principal component alone. The second principal component contributes to explaining 10.41% of the total variance.

The cumulative proportion represented by Comp.1 and Comp.2 encompasses almost 91% of the total variance. This indicates that utilizing the first two principal components is sufficient for an accurate representation of the data.

While having the first two components is advantageous, understanding their significance is essential. This can be addressed by examining how they correlate with each column through the loadings of each principal component.

explanation for the `pca2$loadings`

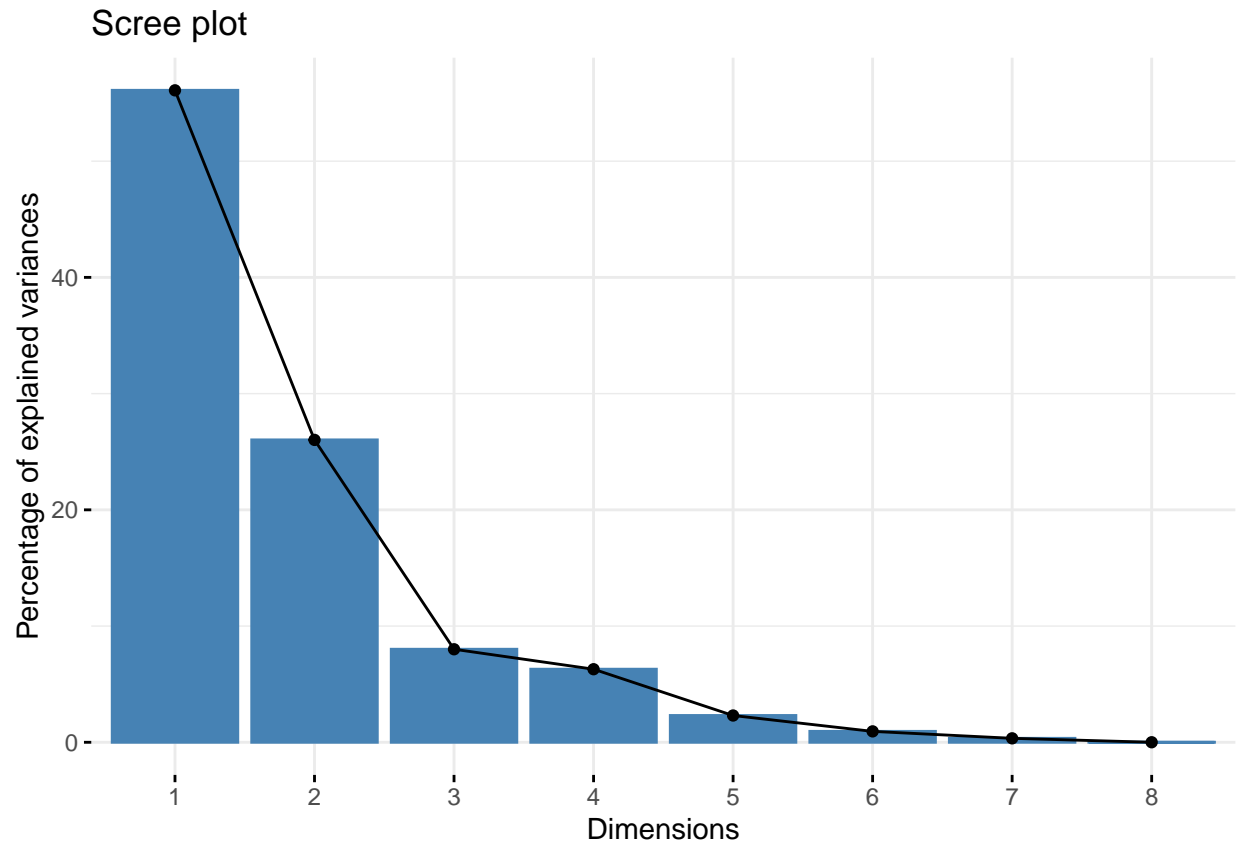
The loading matrix reveals that the first principal component exhibits significantly positive values for Total.Fat, Cholesterol, Sodium and Protein. Conversely, Trans.Fat, Carbohydrates and sugars demonstrate relatively negative values. This indicates that items with elevated consumption of sodium, while those with lower intake Sugars.

Regarding the second principal component, it manifests high positive values for Calories and Sugars. This suggests that the patterns of items are notably influenced by their Calories amount, with emphasizing sugar consumption and inland regions favoring a total fat in items.

```
#visualization package
library(factoextra)
```

```
## Welcome! Want to learn more? See two factoextra-related books at https://goo.gl/ve3WBa
```

```
#Apply PCA
pca <- prcomp(mc2, scale = TRUE)
#Visualize eigenvalues from scree plot. Each principal component shows the percentage of variances.
fviz_eig(pca)
```

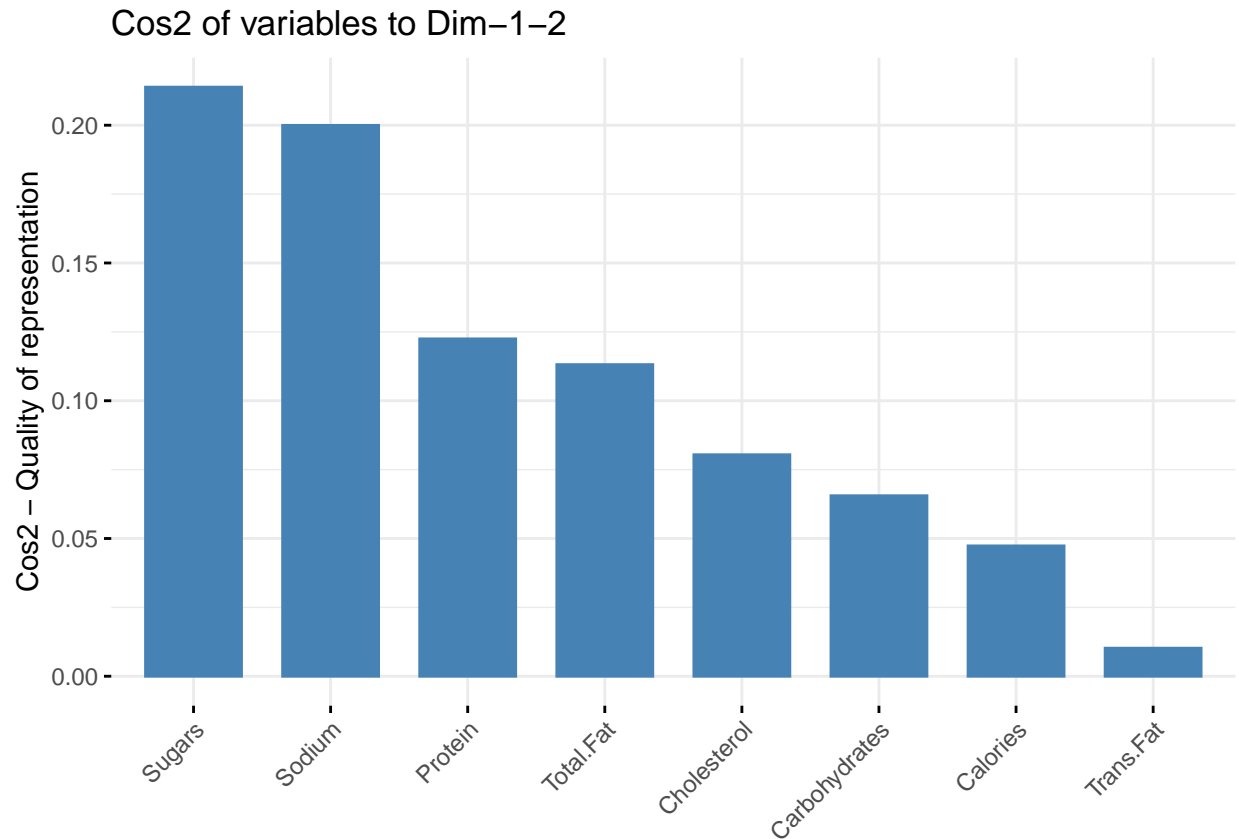


Visualization of Principal Components

While the previous analysis of the loading matrix provided a comprehensive understanding of the relationship between the first two principal components and the attributes in the data, it may lack visual appeal. To address this, several standard visualization strategies are available to help users gain insights into the data, starting with the scree plot.

####Scree Plot The scree plot is employed to visualize the significance of each principal component and aids in determining the number of principal components to retain. To generate the scree plot, the `fviz_eig()` function can be utilized.

```
fviz_cos2(pca2, choice = "var", axes = 1:2)
```

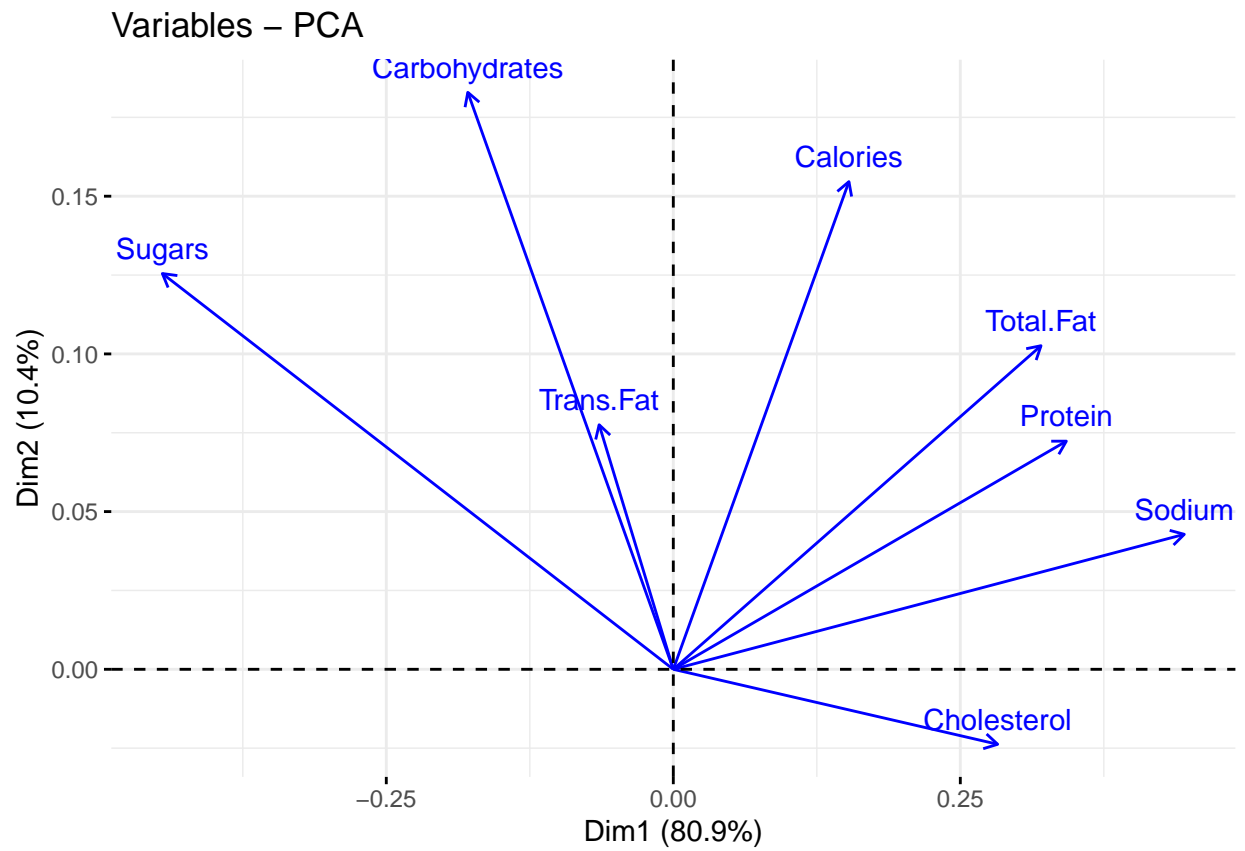
Contribution of Each Variable(Above):

The objective of the third visualization is to assess the representation of each variable in a given principal component. This measure of representation is known as Cos2, representing the square cosine. It is computed using the `fviz_cos2` function.

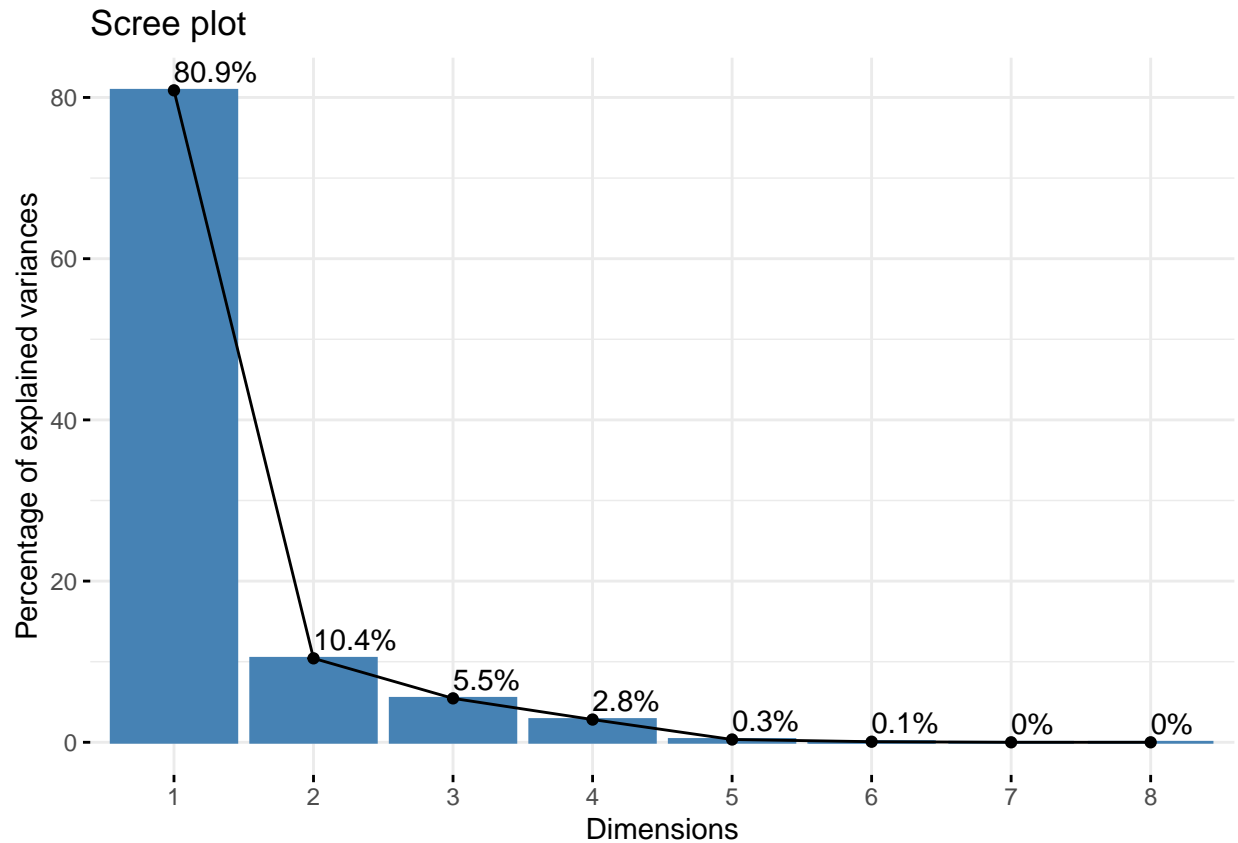
- A low Cos2 value indicates that the variable is not well-represented by that component.
- A high Cos2 value implies a strong representation of the variable on that component.

The code above calculates the square cosine value for each variable concerning the first two principal components. The highest Cos2 makes the most significant contributions to PC1 and PC2.

```
# Graph of the variables  
fviz_pca_var(pca2, col.var = "blue")
```



```
fviz_eig(pca2, addlabels = TRUE)
```



Interpretation of Scree Plot The scree plot displays the eigenvalues in a descending curve, arranged from the highest to the lowest. The first two components emerge as the most substantial, encapsulating nearly 91% of the total information within the data.

Biplot of Attributes(Above) The biplot offers a visual representation that facilitates the observation of similarities and dissimilarities between samples. Furthermore, it illustrates the influence of each attribute on each of the principal components. This comprehensive view aids in understanding the overall structure of the data and the role played by individual attributes in shaping it.

The biplot provides three key:

1. Positive Correlation Grouping - Variables that cluster together on the biplot are positively correlated. This observation aligns with their high values in the loading matrix concerning the first principal component.

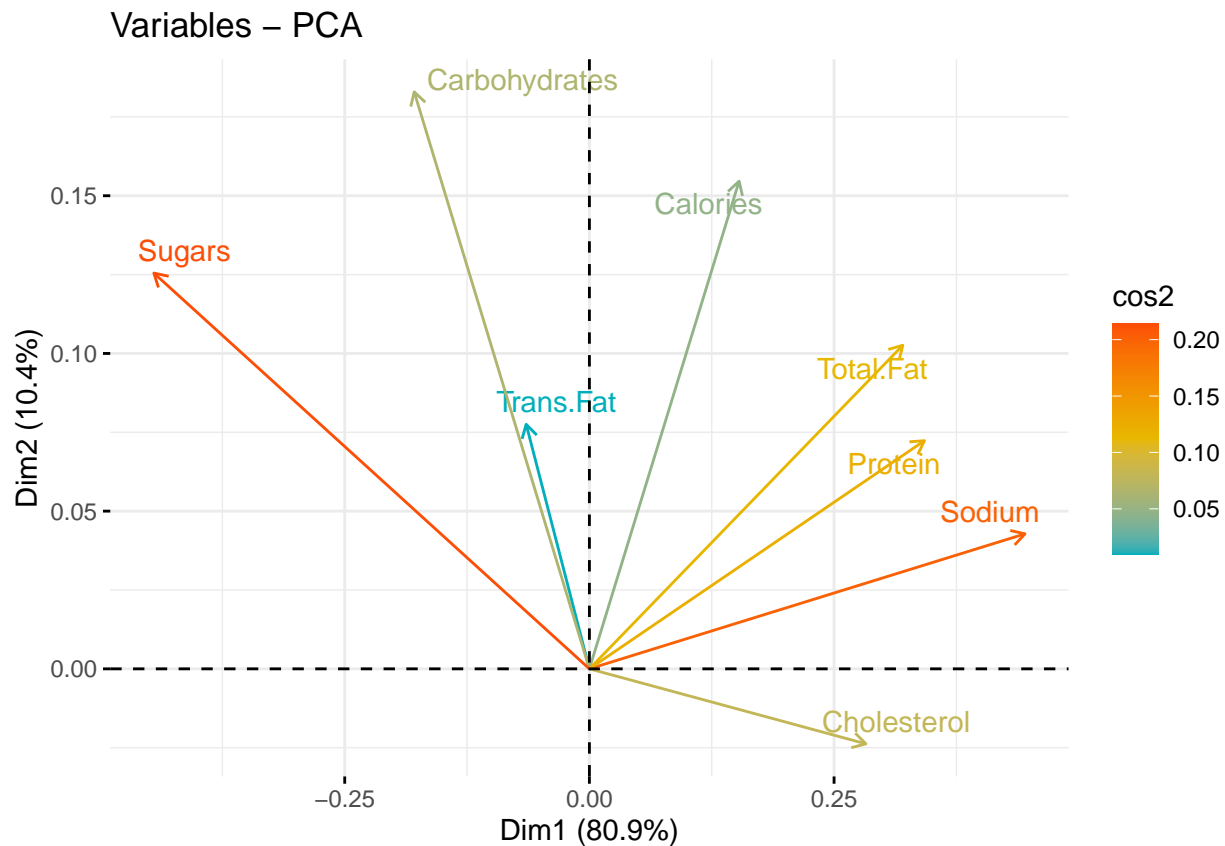
2. Distance from Origin

- The distance from the origin signifies the quality of representation for a variable. Items positioned farther from the origin, are better represented. The magnitude of the distance indicates the strength of representation.

3. Negative Correlation Placement

- Variables with a negative correlation are positioned on opposite sides of the biplot's origin. This spatial arrangement visually emphasizes the negative correlation between these variables.

```
fviz_pca_var(pca2, col.var = "cos2",
             gradient.cols = c("#00AFBB", "#E7B800", "#FC4E07"),
             repel = TRUE)
```

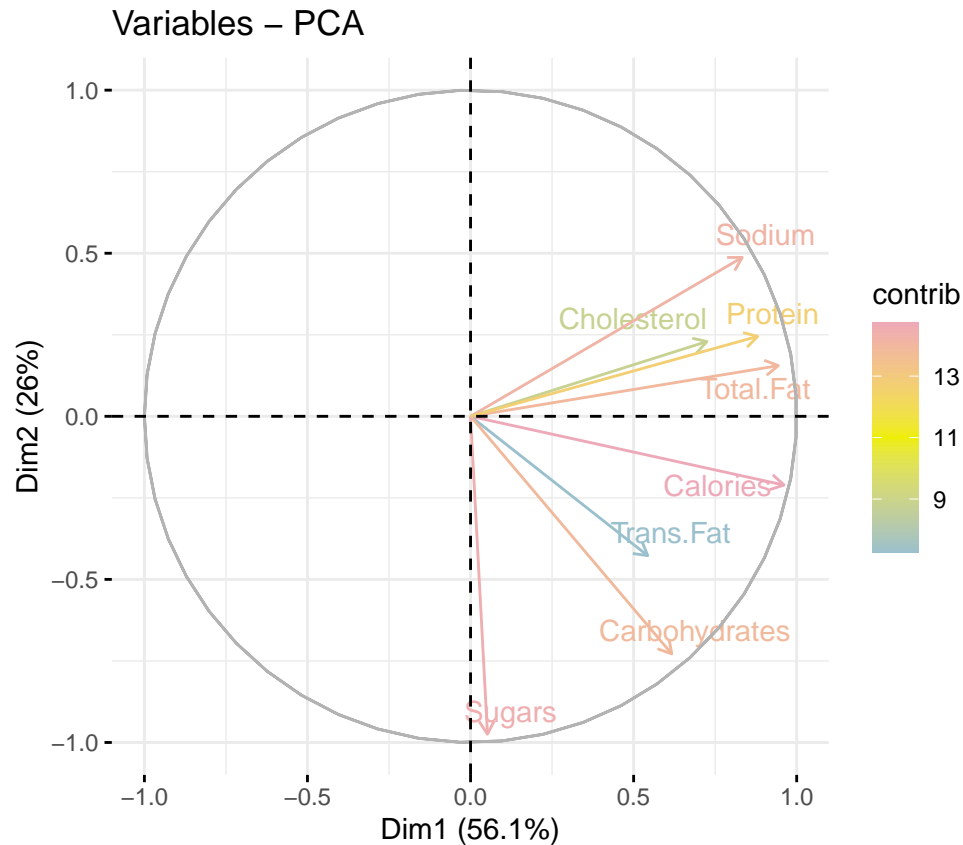


Biplot Combined with Cos2(Above) The biplot and attribute importance, can be integrated into a single biplot. In this visualization, attributes with similar Cos2 scores are assigned similar colors. The adjustment is made using the `fviz_pca_var` function.

- Red Attributes (High Cos2): Sugar and Sodium are highlighted in red, signifying high Cos2 scores. These attributes contribute significantly to both PC1 and PC2.
- Yellow Attributes (Mid Cos2): Total Fat and Protein appear in yellow. Their intermediate Cos2 scores indicate a moderate contribution to PC1 and PC2.
- Blue Attributes (Low Cos2): Tran.Fat and Cholesterol are represented in black, suggesting lower Cos2 scores and a relatively weaker contribution to PC1 and PC2.

#Visualization of Variable Relationships: In a graphical representation of variables, those with positive contributions to PC1 and PC2 are highlighted in red.

```
fviz_pca_var(pca, col.var = "contrib",
             gradient.cols = c("lightblue3", "yellow2", "pink2"), repel = TRUE)
```



```
library(factoextra)
# Computing Eigenvalues
eig.val <- get_eigenvalue(pca)
eig.val
```

```
##      eigenvalue variance.percent cumulative.variance.percent
## Dim.1 4.4875315456      56.094144320          56.09414
## Dim.2 2.0814572924      26.018216155          82.11236
## Dim.3 0.6404733706       8.005917133          90.11828
## Dim.4 0.5031714642       6.289643303          96.40792
## Dim.5 0.1844374396       2.305467996          98.71339
## Dim.6 0.0752416744       0.940520930          99.65391
## Dim.7 0.0273635371       0.342044213          99.99595
## Dim.8 0.0003236759       0.004045949         100.00000
```

```
# Computing Variables
variance <- get_pca_var(pca)
variance$coord
```

```
##      Dim.1      Dim.2      Dim.3      Dim.4      Dim.5
## Calories  0.96121768 -0.2108110  0.11174960 -0.09634118  0.086602448
## Total.Fat  0.94381605  0.1553235  0.01315066 -0.02784511  0.259030334
## Trans.Fat  0.54326123 -0.4271849 -0.71436317  0.09835755  0.012508967
## Cholesterol 0.72491166  0.2293723  0.14377139  0.62715709 -0.088603252
## Sodium    0.83304877  0.4872613  0.06846872 -0.16272002 -0.005409027
```

```
## Carbohydrates 0.61688234 -0.7283657 0.25394677 -0.07249616 0.012357622
## Sugars        0.05182724 -0.9745707 0.15288059 0.03354727 -0.092458256
## Protein       0.88032583 0.2450793 -0.06540724 -0.23928092 -0.305128225
##              Dim.6      Dim.7      Dim.8
## Calories      0.033715432 -0.0317029268 -1.441877e-02
## Total.Fat     0.127616269 0.0263799161 7.684167e-03
## Trans.Fat     -0.047273866 -0.0003142344 2.718294e-05
## Cholesterol   -0.004838861 -0.0046080761 -3.109109e-05
## Sodium        -0.173014503 0.0864702174 -1.809507e-04
## Carbohydrates -0.112873712 -0.0790756673 6.979900e-03
## Sugars        0.055400614 0.1068187479 -2.758827e-04
## Protein       0.099081167 -0.0223813281 2.810516e-03
```

variance\$contrib

```
##              Dim.1      Dim.2      Dim.3      Dim.4      Dim.5
## Calories      20.58903456 2.135105 1.94980366 1.8446243 4.06641086
## Total.Fat     19.85030601 1.159063 0.02700187 0.1540926 36.37911802
## Trans.Fat     6.57672845 8.767266 79.67774427 1.9226462 0.08483867
## Cholesterol   11.71015543 2.527636 3.22733374 78.1693792 4.25647647
## Sodium        15.46440937 11.406603 0.73195319 5.2621833 0.01586314
## Carbohydrates 8.48002560 25.487751 10.06895318 1.0445134 0.08279817
## Sugars        0.05985613 45.630913 3.64925001 0.2236652 4.63492068
## Protein       17.26948446 2.885663 0.66796008 11.3788957 50.47957400
##              Dim.6      Dim.7      Dim.8
## Calories      1.51077224 3.673047e+00 6.423120e+01
## Total.Fat     21.64480298 2.543165e+00 1.824245e+01
## Trans.Fat     2.97018701 3.608571e-04 2.282876e-04
## Cholesterol   0.03111916 7.760095e-02 2.986494e-04
## Sodium        39.78382797 2.732504e+01 1.011603e-02
## Carbohydrates 16.93273697 2.285144e+01 1.505179e+01
## Sugars        4.07915964 4.169872e+01 2.351466e-02
## Protein       13.04739403 1.830625e+00 2.440403e+00
```

variance\$cos2

```
##              Dim.1      Dim.2      Dim.3      Dim.4      Dim.5
## Calories      0.923939421 0.044444129 0.0124879732 0.0092816233 7.499984e-03
## Total.Fat     0.890788744 0.02412539 0.0001729398 0.0007753501 6.709671e-02
## Trans.Fat     0.295132764 0.18248690 0.5103147344 0.0096742071 1.564743e-04
## Cholesterol   0.525496919 0.05261167 0.0206702132 0.3933260100 7.850536e-03
## Sodium        0.693970249 0.23742357 0.0046879653 0.0264778045 2.925758e-05
## Carbohydrates 0.380543824 0.53051665 0.0644889638 0.0052556936 1.527108e-04
## Sugars        0.002686063 0.94978797 0.0233724745 0.0011254193 8.548529e-03
## Protein       0.774973563 0.06006384 0.0042781065 0.0572553563 9.310323e-02
##              Dim.6      Dim.7      Dim.8
## Calories      1.136730e-03 1.005076e-03 2.079010e-04
## Total.Fat     1.628591e-02 6.959000e-04 5.904643e-05
## Trans.Fat     2.234818e-03 9.874326e-08 7.389122e-10
## Cholesterol   2.341458e-05 2.123437e-05 9.666562e-10
## Sodium        2.993402e-02 7.477098e-03 3.274314e-08
## Carbohydrates 1.274047e-02 6.252961e-03 4.871901e-05
## Sugars        3.069228e-03 1.141024e-02 7.611129e-08
## Protein       9.817078e-03 5.009238e-04 7.898999e-06
```

```
index_pca <- get_pca_ind(pca)
index_pca$coord
```

##	Dim.1	Dim.2	Dim.3	Dim.4	Dim.5
## 1	0.632195679	1.66460824	0.457026157	1.859793542	-0.656914811
## 2	-0.500834289	1.27344758	-0.076992811	-0.512793546	-0.419241367
## 3	0.124825382	1.33839038	0.063469559	-0.303369964	0.526046764
## 4	1.693225156	1.89788192	0.582820505	1.826981580	-0.197899901
## 5	0.534132794	1.47398474	0.067185870	-0.519700667	0.102973088
## 6	2.416223536	1.30093578	-1.486817029	2.137850810	-0.714136136
## 7	1.822578500	1.87417198	0.690325982	1.329100197	-0.076279559
## 8	2.188694833	1.81947948	0.808950390	1.223962756	0.139091970
## 9	0.712672654	1.51803186	0.182124338	-0.826533055	0.071072666
## 10	1.127273975	1.45890138	0.314619674	-0.942026664	0.329701906
## 11	0.451647912	1.34653164	0.194184180	-0.549089886	0.966782240
## 12	0.798879173	1.29792064	0.306996982	-0.648574644	1.173760980
## 13	1.990108483	1.86514957	0.686235128	1.368283280	0.333375067
## 14	2.366532137	1.79258755	0.816091078	1.259528375	0.549765089
## 15	0.851501059	1.47644213	0.193329738	-0.760154116	0.535183440
## 16	1.258434241	1.43501198	0.317681610	-0.873321274	0.801537584
## 17	0.553713090	1.30473772	0.231655585	-0.759003493	0.277147997
## 18	0.919829423	1.25004523	0.350279993	-0.864140934	0.492519526
## 19	3.211149088	1.42436210	-1.292259871	1.649631507	-0.134237656
## 20	1.745000072	1.34567836	0.869373951	1.346407182	-0.367370310
## 21	0.627369532	0.95419682	0.373253034	-0.805541842	-0.234899014
## 22	0.375643516	0.80967502	0.384374065	-0.473825657	0.647971623
## 23	2.371485000	1.44989472	0.967349647	1.362516733	0.033569408
## 24	1.292941739	1.10133308	0.460304715	-0.795879763	0.223379124
## 25	3.400374265	1.35046924	-0.011423236	1.181237170	-0.453468234
## 26	2.254951760	0.95590875	-0.505811300	-0.943224766	-0.251441589
## 27	4.415524762	0.77685490	-2.044873417	1.570782731	-0.409298310
## 28	4.875821037	2.47993807	1.626539730	3.783932662	-0.180327990
## 29	5.247899394	2.45465202	1.739986022	3.673170752	0.042331898
## 30	2.240351417	1.51575871	0.492777790	-1.346586573	0.620726835
## 31	2.587582677	1.46714772	0.605590593	-1.446071331	0.827705575
## 32	7.189553054	1.42649629	2.677769653	3.101912717	-0.148512050
## 33	7.554816330	1.39535719	2.789733271	2.995126266	0.074366111
## 34	4.615000654	0.47890935	1.536528960	-2.056916609	0.633037487
## 35	4.987932068	0.43006991	1.656636043	-2.166029510	0.848190744
## 36	-0.467992379	0.16190427	0.427041930	-0.346342659	0.292685697
## 37	0.937737010	0.51205263	0.616519254	-0.525392848	0.559632668
## 38	-0.049269867	1.48516380	0.140883216	0.530640800	0.125696922
## 39	-1.845300573	1.11302023	-0.320476945	0.021757572	0.672751399
## 40	-0.111709041	-0.52799575	0.661214171	-0.332328050	0.821557421
## 41	-1.204351136	-0.55133019	0.410645015	-0.154148217	0.124275369
## 42	-1.396382915	-0.06885120	0.192203220	-0.109829551	0.196005640
## 43	1.984760606	0.42178521	-1.632686605	-0.096858504	0.143519058
## 44	2.525165375	0.34832147	-2.741989258	-0.035010165	-0.286794692
## 45	3.369703946	0.47150204	-2.579157014	-0.351056262	-0.566493247
## 46	3.251801316	0.41124393	-2.645366206	-0.254936569	-0.454534112
## 47	2.463681383	0.18078470	-2.725134083	-0.081330003	-0.127093267
## 48	5.132801811	0.12080210	-4.625747344	0.163063487	-0.579944075
## 49	-0.892795153	0.92329824	-0.030147070	-0.166351041	-0.080521296

## 50	-0.090090973	0.71819901	-0.980685294	-0.059424311	-0.110105829
## 51	1.556467100	0.75460373	-1.823688882	0.035211214	-0.205929044
## 52	4.106338099	0.44668291	-2.438949806	-0.426498397	-0.159362975
## 53	1.058424875	0.59844506	-1.914831418	0.064732218	-0.254552556
## 54	1.763529475	0.84167306	-1.827800209	-0.089599850	-0.343149828
## 55	1.274748558	0.56821443	-1.881558503	0.105111816	-0.010375420
## 56	1.499572604	0.73950924	-1.835798808	-0.010255314	0.034713838
## 57	1.151996008	1.08358446	0.394805650	-0.486975338	0.149327096
## 58	1.139482494	0.86422023	0.448590020	-0.839313998	-0.058878188
## 59	0.401953112	1.13881623	0.168589742	-0.517104089	-1.035632687
## 60	2.697925497	1.27022092	0.653435683	-1.085348554	-0.311915950
## 61	1.956903874	1.56853950	0.363686538	-0.763496640	-1.289907214
## 62	2.206382729	1.19403933	0.597801240	-1.063900746	-0.291174815
## 63	1.458546024	1.48650485	0.306569420	-0.738073373	-1.268947806
## 64	3.611910873	0.86216826	-0.166139555	-1.072489351	-0.047539657
## 65	2.572087483	1.50547985	0.584143348	-0.912195224	-1.059468052
## 66	0.604437333	1.08380583	0.253463133	-0.626969663	-0.054805646
## 67	-0.023240010	1.01768591	0.175470194	-0.422481680	0.232339398
## 68	1.208144315	1.37100362	0.367555698	-0.636739492	0.089850016
## 69	0.867458981	1.35735403	0.295991837	-0.685873462	0.078300054
## 70	0.106246536	1.12889394	0.203641023	-0.498015415	0.228192221
## 71	2.789308663	1.07944088	-0.422512536	-0.882025203	-0.068310813
## 72	1.742802274	1.67815563	0.328467355	-0.772414843	-1.067314332
## 73	2.344060641	0.84174927	-0.453399418	-0.791153515	0.215671533
## 74	1.540248173	1.11023890	-0.747771180	-0.486459388	-0.688099961
## 75	2.723001423	0.58460323	-0.244329973	-0.973721623	0.341903257
## 76	1.712370426	1.20396381	0.522996077	-0.822697644	-0.660613857
## 77	1.459999982	0.80439787	0.618691714	-0.901303593	0.029309345
## 78	0.692557230	1.08775449	0.317167162	-0.626131772	-0.936643201
## 79	-1.283531120	1.35878394	-0.325800301	-0.001068486	0.272997547
## 80	-0.536577560	1.43445382	-0.170211140	-0.127907723	0.321274097
## 81	0.992978301	1.58547019	0.129333265	-0.467416739	0.375859379
## 82	4.776979725	1.98257275	0.881915712	-1.216237749	0.478010064
## 83	12.909527260	2.01986261	0.312632883	-2.467284690	0.871976990
## 84	0.030054696	0.94110813	0.157147365	-0.339494095	0.314453972
## 85	-1.592862308	1.25770619	-0.365357862	0.078694870	-0.012007729
## 86	0.564010972	1.62748425	-0.007026316	-0.376498168	-0.324964747
## 87	-0.202578723	1.88728748	-0.301890078	-0.099677338	-1.298423924
## 88	-1.836642952	0.85323448	-0.274272591	0.048958513	0.102298779
## 89	0.781708190	0.99820537	0.277719987	-0.619238550	-0.084072156
## 90	0.002508900	1.28309242	-0.014668545	-0.290647933	-1.104302639
## 91	-0.153971742	0.98440380	0.135719932	-0.435318283	0.159777950
## 92	-0.540163846	1.12977386	-0.009732996	-0.273010704	-0.350446428
## 93	-0.222513424	1.14170448	0.065789106	-0.356525402	0.175133759
## 94	-0.608705528	1.28707453	-0.079663822	-0.194217824	-0.335090619
## 95	0.080836489	1.26789173	0.081545739	-0.390735172	0.334814921
## 96	-0.368146460	1.38343284	-0.068529806	-0.245585380	-0.101189687
## 97	-1.563186751	0.72099437	-0.137038488	-0.041216375	0.781833924
## 98	-0.940705611	0.50666927	0.084504793	-0.250753976	0.975029205
## 99	0.009199936	0.14117711	0.451402422	-0.550956424	1.354247031
## 100	-2.213260695	0.96363248	-0.384675755	0.152820041	0.474697954
## 101	-2.689196639	1.09773974	-0.561143860	0.282465559	0.161859223
## 102	-2.740970915	1.05650705	-0.551718758	0.320438676	0.212555522
## 103	-1.925455283	0.16343654	-0.053652465	0.082265192	0.025048756

## 104	-1.403726722	0.40546737	-0.008117798	-0.059747874	0.787112171
## 105	-1.857488274	0.54315979	-0.167707128	0.181147399	0.451178231
## 106	-1.899829444	0.58966035	-0.171250156	0.167521517	0.372919987
## 107	-2.534184758	0.96104352	-0.472766586	0.306612724	0.207517665
## 108	-0.815537191	-0.73838086	0.511285155	-0.036023865	0.010892211
## 109	-0.790522571	-0.77682472	0.575737067	0.015648177	0.072287260
## 110	-1.178506389	-0.66805547	0.415551295	0.102888130	-0.013780861
## 111	-2.113441195	-0.49286719	0.153818730	0.182533224	0.082873872
## 112	-1.818157159	-1.18919633	0.475707016	0.115134117	0.029311239
## 113	-1.432708625	-2.10772958	0.897938838	0.028575098	-0.039797378
## 114	-2.311745651	-0.01288910	-0.066243347	0.226796961	0.120672250
## 115	-2.806271900	1.21362063	-0.623862030	0.334465070	0.218193992
## 116	-2.799456818	1.21947368	-0.622379355	0.330489611	0.217975720
## 117	-2.789234196	1.22825326	-0.620155342	0.324526421	0.217648311
## 118	-2.802864359	1.21654716	-0.623120693	0.332477341	0.218084856
## 119	-2.106800201	-0.33657582	0.111384524	0.165282547	0.109881187
## 120	-1.820178616	-1.01804388	0.429685218	0.097572933	0.047598356
## 121	-1.440013136	-1.83909866	0.819839062	0.005012175	-0.009079663
## 122	-2.303313843	0.06964638	-0.086348444	0.215190027	0.134012203
## 123	-2.692641980	1.27847293	-0.629271559	0.251567699	0.092522253
## 124	-2.635827019	1.31089908	-0.631976323	0.210119013	0.029686384
## 125	-2.572196978	1.34917829	-0.633198413	0.164694868	-0.033367758
## 126	-2.742641858	1.25189983	-0.625084119	0.289040925	0.155139850
## 127	-2.115316708	-0.39246219	0.122482091	0.174543755	0.095195333
## 128	-1.802057213	-1.12436119	0.463745385	0.101200733	0.034926288
## 129	-1.417546436	-1.99269195	0.870308887	0.010646980	-0.028021598
## 130	-2.305868327	0.04316645	-0.080428991	0.218826767	0.126614708
## 131	-1.996546910	0.87914068	-0.367732302	0.066823539	-0.193191505
## 132	-1.872808296	0.42146244	-0.178997247	-0.050681734	-0.388598648
## 133	-2.419121940	0.34512069	-0.214210451	0.242620303	0.163989502
## 134	-2.081030814	-0.16788653	0.029219933	0.121082166	0.029371779
## 135	-1.858370078	-0.56802131	0.217576097	0.047615569	-0.056612881
## 136	-1.415965330	-1.42773575	0.625886491	-0.079404188	-0.164605634
## 137	-2.813086981	1.20776757	-0.625344705	0.338440530	0.218412265
## 138	-2.806271900	1.21362063	-0.623862030	0.334465070	0.218193992
## 139	-2.806271900	1.21362063	-0.623862030	0.334465070	0.218193992
## 140	-2.802864359	1.21654716	-0.623120693	0.332477341	0.218084856
## 141	-2.809679440	1.21069410	-0.624603368	0.336452800	0.218303128
## 142	-2.084852462	-0.35395988	0.100283223	0.149288140	0.048331754
## 143	-1.927753835	-0.74501063	0.278749030	0.114613996	0.015116866
## 144	-1.751770137	-1.14214288	0.463026442	0.074287170	-0.009705233
## 145	-2.300613417	0.02537885	-0.077582737	0.221125003	0.135444042
## 146	-2.813086981	1.20776757	-0.625344705	0.338440530	0.218412265
## 147	-2.813086981	1.20776757	-0.625344705	0.338440530	0.218412265
## 148	-2.813086981	1.20776757	-0.625344705	0.338440530	0.218412265
## 149	-1.541199859	0.86856237	-0.263595082	0.124861093	0.047163071
## 150	-1.291432666	0.78102163	-0.185821113	0.075254043	-0.033000931
## 151	-0.755726319	0.64487892	-0.041914821	-0.021507411	-0.109081838
## 152	-1.072486608	-0.25137894	0.248490069	0.020771898	-0.038619157
## 153	-0.687941546	-0.64712460	0.468945180	-0.059572386	-0.139021768
## 154	-0.047502782	-1.04396781	0.731828677	-0.179449936	-0.237245934
## 155	-1.072486608	-0.25137894	0.248490069	0.020771898	-0.038619157
## 156	-0.707679676	-0.61748971	0.456472785	-0.055568712	-0.139907926
## 157	-0.048355840	-1.02041442	0.725167887	-0.181098945	-0.229739302

```

## 158 -1.113692438 -0.16245161 0.206893799 0.030361491 -0.034035667
## 159 -0.730000433 -0.53464388 0.420688120 -0.051631802 -0.126931647
## 160 -0.082746588 -0.92563403 0.685054292 -0.175484812 -0.225374085
## 161 -1.349040892 0.70389636 -0.134075417 0.055779073 0.089136700
## 162 -1.013181646 0.59818165 -0.032955535 -0.042201085 -0.043105991
## 163 -0.486415291 0.41728596 0.142049307 -0.120650620 -0.055187134
## 164 -2.000267588 0.79487803 -0.357090990 -0.039208712 -0.416000639
## 165 -1.810046778 0.67886188 -0.285346527 -0.134672852 -0.534175984
## 166 -1.456963203 0.52825662 -0.172474936 -0.257448187 -0.772325168
## 167 -1.521247015 -0.34293281 0.166225704 -0.146915371 -0.500764375
## 168 -1.226293788 -0.71964946 0.356947371 -0.265495607 -0.641082979
## 169 -0.768477795 -1.13095522 0.588796167 -0.411387038 -0.901375421
## 170 -1.532407394 -0.30150989 0.148333372 -0.144946916 -0.494276236
## 171 -1.226293788 -0.71964946 0.356947371 -0.265495607 -0.641082979
## 172 -0.768477795 -1.13095522 0.588796167 -0.411387038 -0.901375421
## 173 -1.559045305 -0.25107895 0.125370772 -0.139313508 -0.496290021
## 174 -1.264092077 -0.62779560 0.316092439 -0.257893744 -0.636608625
## 175 -0.820844004 -1.00060497 0.529307565 -0.399828990 -0.890303792
## 176 -1.804701080 0.63313855 -0.226829987 -0.110278461 -0.374136147
## 177 -1.590458087 0.48430988 -0.131881101 -0.214965260 -0.490383644
## 178 -1.187652174 0.30066366 0.011489192 -0.356591396 -0.718430465
## 179 -0.681953214 -0.48026127 0.437833807 0.007590178 -0.002400647
## 180 -0.176930265 -0.87862633 0.673565897 -0.115734544 -0.086884875
## 181 0.700539989 -1.61350157 -0.102764690 -0.047393226 -0.124159991
## 182 -1.090569524 -0.53965138 0.346814305 -0.162612222 -0.401987256
## 183 -0.755348224 -0.95509286 0.563463923 -0.294776785 -0.540728619
## 184 -0.283817369 -1.38134162 0.807285598 -0.446273411 -0.800111706
## 185 -0.749028596 -0.33780729 0.370928198 0.022116463 -0.008683474
## 186 0.014081107 -1.04875638 -0.442628627 0.087864830 0.009220346
## 187 0.618811988 -1.40590209 -0.197311499 -0.031256481 -0.125191444
## 188 -1.194014623 -0.41206438 0.287061486 -0.118563630 -0.346089032
## 189 -0.822423606 -0.81263888 0.496558313 -0.280250500 -0.547011447
## 190 -0.381226663 -1.17753137 0.712160433 -0.428755044 -0.822371905
## 191 -0.492170398 -0.52426197 0.490572321 0.001294755 0.003142197
## 192 0.350145438 -1.26459264 -0.297623300 0.084530690 -0.050832558
## 193 0.987582778 -1.69423162 -0.012149267 -0.017779146 -0.086426059
## 194 -1.002002998 -0.60183643 0.381135058 -0.208384027 -0.477931739
## 195 -0.665928640 -1.04083130 0.604445466 -0.338899581 -0.624179733
## 196 -0.166041223 -1.47370265 0.848679461 -0.520863341 -0.974697522
## 197 -2.032688038 0.29023543 -0.104999406 0.308475141 0.286843103
## 198 -1.721138466 -0.02561183 0.092898534 0.352903892 0.359077361
## 199 -1.237000199 -0.65060271 0.438460689 0.330861801 0.328463431
## 200 -2.062733489 0.33773984 -0.128703344 0.316096278 0.284938454
## 201 -1.762344296 0.06331551 0.051302265 0.362493485 0.363660851
## 202 -1.306488811 -0.50823599 0.366257869 0.350012773 0.338734841
## 203 -2.073893867 0.37916276 -0.146595676 0.318064733 0.291426593
## 204 -1.762344296 0.06331551 0.051302265 0.362493485 0.363660851
## 205 -1.319411859 -0.47274805 0.355268149 0.350040987 0.337630411
## 206 -2.100531778 0.42959370 -0.169558276 0.323698142 0.289412807
## 207 -1.800142585 0.15516937 0.010447332 0.370095348 0.368135205
## 208 -1.357210148 -0.38089419 0.314413217 0.357642850 0.342104765
## 209 -2.287769932 1.08907819 -0.432539195 0.346480164 0.379211923
## 210 -2.045798361 1.03938686 -0.341753426 0.399130395 0.490289079
## 211 -1.739439296 0.98242423 -0.228699615 0.403187620 0.528082000

```

##	212	-0.955438741	-0.16283706	0.276236014	0.120584495	0.132448310
##	213	-0.605946261	-0.51836682	0.481296690	0.074620412	0.134779592
##	214	0.523569965	-1.59106470	-0.133328257	0.039256835	-0.053134763
##	215	-1.296004698	-0.22878053	0.216020312	0.015109723	-0.136305878
##	216	-1.012211849	-0.56407426	0.388849647	-0.101502058	-0.270136343
##	217	-0.346546220	-1.33053701	0.802600109	-0.300689596	-0.527061189
##	218	-0.995876213	-0.07081402	0.232293005	0.129477372	0.128179268
##	219	-0.654136572	-0.38199433	0.420202686	0.083494014	0.136889553
##	220	0.415779569	-1.41620173	-0.209490734	0.081298422	0.009033328
##	221	-1.337295228	-0.11320409	0.165416513	0.022353590	-0.133068289
##	222	-1.068979910	-0.43948981	0.333175580	-0.090593238	-0.275400678
##	223	-0.428274221	-1.12293752	0.708053300	-0.284552852	-0.528092641
##	224	0.512126649	-1.82788793	-1.211081047	0.618478129	0.474859298
##	225	1.128784648	-2.38774189	-0.875144706	0.548074874	0.490034743
##	226	1.832892436	-3.07784523	-0.464356762	0.513104170	0.490820039
##	227	0.533181912	-1.80243993	-1.221155878	0.619332349	0.516298297
##	228	1.169445960	-2.35318499	-0.874926804	0.599584647	0.519653298
##	229	2.162048193	-3.37041182	-1.515402451	0.729789195	0.553357232
##	230	0.985116059	-2.25002618	-0.974319895	0.502640667	0.628026839
##	231	1.546832724	-2.82906976	-0.623577419	0.519153974	0.651323672
##	232	2.664642434	-3.90124154	-1.222399447	0.598241446	0.669027407
##	233	-1.709427696	-0.78980655	0.359658696	0.080092179	0.007859543
##	234	-1.442802886	-1.23959148	0.579199766	-0.004317420	-0.062584290
##	235	-1.056256587	-1.94523309	0.918272691	-0.120137123	-0.160742179
##	236	-1.716049936	-0.70939644	0.314482349	0.063099488	-0.065988046
##	237	-1.459732447	-1.14131185	0.522791876	-0.017692646	-0.137450371
##	238	-1.080085929	-1.82615741	0.851374596	-0.131882615	-0.236735888
##	239	-1.726606654	-0.83083184	0.367168671	0.089042880	-0.015546508
##	240	-1.454811633	-1.27175528	0.580548466	0.004585793	-0.078506909
##	241	-1.068265335	-1.97739689	0.919621391	-0.111233911	-0.176664797
##	242	0.940417168	-2.34501093	-0.925945740	0.332814814	0.153309959
##	243	1.758984490	-3.13337674	-0.452197804	0.242255349	0.097674548
##	244	2.716834987	-4.01412929	0.081813714	0.089710235	-0.007357882
##	245	1.100797817	-2.78306087	-0.768819798	0.301138190	0.034339843
##	246	1.957931787	-3.66018483	-0.256563670	0.202280146	-0.034622454
##	247	2.875156658	-4.63231760	0.303100333	0.088179826	-0.099775452
##	248	1.182804747	-2.71308067	-0.753236829	0.256766346	0.057018206
##	249	2.035593419	-3.54292865	-0.257390358	0.155901297	-0.005674224
##	250	2.950086867	-4.51111068	0.293539374	-0.045504798	-0.171674435
##	251	1.776036260	-3.41016442	-0.370785649	0.258068001	0.007376700
##	252	2.728777790	-4.34387682	0.175064774	0.112796365	-0.112450719
##	253	1.291547154	-2.78022928	0.446649534	-0.080288154	0.273600973
##	254	3.316379756	-4.71025347	0.336892211	-0.181059588	0.222031865
##	255	-0.274240386	-1.20555755	0.779176431	-0.039117063	0.193464934
##	256	0.664912104	-1.83125730	0.023809173	-0.028804779	0.144545666
##	257	1.994197301	-3.07812598	-0.458823173	-0.072010035	0.240772704
##	258	-0.704956025	-0.59072343	0.499364316	-0.012743449	0.129476149
##	259	2.852349545	-3.53979800	-0.198585605	-0.298398174	0.211288862
##	260	-0.288339336	-0.81971974	0.631218695	-0.130426302	0.219953669
##		Dim.6	Dim.7	Dim.8		
##	1	-0.142837538	-0.1545652168	2.318972e-02		
##	2	-0.260344590	-0.0726007173	4.388633e-02		
##	3	0.158384157	0.0445119341	2.614276e-02		
##	4	0.433819903	-0.0671177611	1.291190e-02		

```

## 5    0.270135101  0.0097679127  3.366878e-02
## 6   -0.103565590 -0.0795283167  1.233405e-02
## 7   -0.273153483  0.2230638090 -5.572322e-03
## 8   -0.297484733  0.2576726872 -1.923666e-02
## 9   -0.391025970  0.2862203681 -2.872099e-02
## 10  -0.408103645  0.3241939543  1.238209e-03
## 11  -0.172483350  0.2690399735 -3.101755e-02
## 12  -0.201930242  0.3116253798 -1.132590e-02
## 13   0.114248774  0.1671591239 -2.288301e-04
## 14   0.075352513  0.1848478606 -1.609276e-04
## 15  -0.039125180  0.2737317855 -3.775845e-02
## 16  -0.052314127  0.2801305849 -7.090267e-03
## 17  -0.426507214  0.1300305039  1.114958e-03
## 18  -0.450838464  0.1646393821 -1.254938e-02
## 19  -0.439550901  0.2955599677 -1.003115e-02
## 20  -0.443389944  0.2226264502 -2.412258e-02
## 21  -0.573900869  0.2993550878 -7.177065e-04
## 22  -0.341803940  0.2974988003 -1.684552e-02
## 23  -0.117789838  0.3098794884 -1.151561e-02
## 24  -0.202912796  0.3842618020 -4.598677e-03
## 25  -0.330995241 -0.0572360525  1.835331e-02
## 26  -0.473438252  0.0402775142 -1.900200e-02
## 27  -0.503457235 -0.0544529896  1.721378e-03
## 28   0.339886353  0.0583323119  1.289853e-02
## 29   0.297581944  0.0794845931 -4.054314e-04
## 30  -0.047855291  0.2483819269 -1.556506e-02
## 31  -0.077302183  0.2909673332  4.126585e-03
## 32  -0.390446173 -0.3976569996  1.108418e-03
## 33  -0.421819638 -0.3855638133 -1.202124e-02
## 34  -0.702894606 -0.2172820406  1.655670e-02
## 35  -0.738156800 -0.1736140675  2.718063e-03
## 36  -0.654284302 -0.4441263919  1.299456e-02
## 37  -0.247067577 -0.2127173827 -1.575350e-04
## 38  -0.151283246  0.0829250178 -2.092569e-02
## 39  -0.110942591 -0.0027904611 -2.077817e-02
## 40  -0.052881151 -0.2898704710 -3.906257e-03
## 41  -0.314611442 -0.3625022886 -7.510016e-03
## 42  -0.248275031 -0.5422770450 -2.276232e-02
## 43  -0.131963273 -0.1577065804 -7.542048e-03
## 44  -0.241577305  0.0134547706 -6.025810e-03
## 45  -0.342658549  0.1318381504  1.958837e-03
## 46   0.027206282 -0.1004144363  6.870865e-03
## 47  -0.140456875 -0.1932627324  1.757776e-03
## 48   0.375786731 -0.0713427677 -3.174273e-03
## 49  -0.147153371 -0.2241792879  2.602676e-02
## 50  -0.358465087 -0.0861325951  1.634417e-03
## 51  -0.307379419  0.0835912111 -1.958677e-02
## 52   0.077774624  0.1541766576 -8.409843e-04
## 53  -0.290965236 -0.0572201883 -1.036231e-02
## 54  -0.251192639  0.1147301545  1.691862e-02
## 55  -0.015202528 -0.1150428493 -2.551879e-02
## 56  -0.299195705  0.1013426337  1.410750e-02
## 57   0.197270388  0.0018046381 -1.072215e-02
## 58  -0.038521390 -0.2663555206  1.491345e-02

```

```

## 59 -0.062620643 -0.3174894393 3.756163e-02
## 60 0.279088506 -0.0731234810 8.552114e-03
## 61 0.258623320 -0.0982781634 1.729376e-02
## 62 -0.013275890 -0.0213786727 -9.588771e-03
## 63 -0.022810132 -0.0555924500 -6.728216e-04
## 64 -0.123655625 0.1903531154 -1.825750e-02
## 65 0.056682146 0.1674117612 -1.127629e-02
## 66 -0.031432292 -0.1376747500 -1.123978e-02
## 67 -0.234907156 -0.1233560414 -1.660469e-03
## 68 -0.204161744 0.1548985581 -1.998175e-02
## 69 -0.359051895 0.2234149523 2.089978e-03
## 70 -0.442595087 0.0487667613 -4.972260e-03
## 71 -0.241507907 0.0558505946 3.149028e-02
## 72 -0.037070634 0.0399853437 4.854155e-03
## 73 -0.213859219 -0.0340936276 3.025256e-03
## 74 -0.253995498 -0.0548700548 -1.631751e-03
## 75 -0.416300092 -0.0440568539 2.332744e-02
## 76 -0.245411690 -0.0918948777 1.068491e-02
## 77 -0.377405060 -0.0356765882 6.688599e-03
## 78 -0.385928602 -0.0682943311 1.570356e-02
## 79 0.244657282 -0.0076741088 2.807161e-03
## 80 0.326467035 -0.0027188410 1.664371e-02
## 81 0.527825622 -0.0110301148 2.473180e-02
## 82 0.993157330 -0.0185990421 1.084767e-02
## 83 1.517850230 -0.0063088634 1.638951e-02
## 84 0.153405226 -0.3003665631 -8.030491e-03
## 85 0.178215967 0.0456282399 -9.298294e-03
## 86 0.476321528 0.1343100767 -1.657195e-02
## 87 0.474840202 0.1242080257 -8.091665e-03
## 88 0.036934506 -0.2021805499 1.368642e-02
## 89 0.254624106 -0.0700851766 2.413018e-02
## 90 0.212340334 -0.1155247085 2.980533e-03
## 91 -0.190193703 -0.0168433951 -7.367233e-03
## 92 -0.216801061 -0.0350336136 -1.802921e-02
## 93 -0.133181369 -0.1175764110 -1.176205e-02
## 94 -0.159788727 -0.1357666295 -2.242403e-02
## 95 0.018197716 0.0074984694 2.321204e-02
## 96 -0.028080736 -0.0063134939 -8.485838e-04
## 97 0.005376163 -0.4728583217 -4.701811e-03
## 98 0.019125533 -0.7106814001 -2.740176e-03
## 99 -0.012991531 -1.0787312766 1.217528e-02
## 100 0.005404843 -0.2377351916 -3.346179e-03
## 101 0.030036159 -0.0407472940 -4.635637e-03
## 102 0.013838758 -0.0114611172 -1.989991e-03
## 103 -0.040523358 -0.0718502097 7.548771e-03
## 104 0.099801505 -0.1712597774 8.533851e-03
## 105 0.149738778 -0.0001116858 7.482130e-03
## 106 0.001285389 -0.0357722651 -5.275864e-03
## 107 0.064481740 0.0029154215 -4.142513e-03
## 108 0.134963739 0.0737231596 -2.737644e-02
## 109 -0.040597854 -0.1843714810 -5.421338e-03
## 110 0.077957884 0.0267423513 -2.998059e-02
## 111 -0.178471365 0.1071922399 4.244008e-02
## 112 -0.273607722 0.1533914262 5.337797e-02

```

```

## 113 -0.390661304 0.2070857613 6.367883e-02
## 114 -0.116183176 0.0775472971 3.069087e-02
## 115 0.032367751 0.0096962599 -5.455234e-03
## 116 0.021436807 0.0187553548 -5.629538e-03
## 117 0.005040391 0.0323439971 -5.890996e-03
## 118 0.026902279 0.0142258073 -5.542386e-03
## 119 -0.226699450 0.0917356821 1.632996e-02
## 120 -0.343347865 0.1595000388 6.036236e-02
## 121 -0.472683214 0.2246510102 4.383235e-02
## 122 -0.148495426 0.0766133394 1.750508e-02
## 123 0.030007565 0.0403681977 2.084287e-02
## 124 0.028827472 0.0557041666 3.399193e-02
## 125 0.016716435 0.0800992304 4.696668e-02
## 126 0.020256714 0.0340913237 7.519516e-03
## 127 -0.196218604 0.1231784236 1.552206e-02
## 128 -0.309808701 0.1840322553 3.948319e-02
## 129 -0.435735902 0.2457196822 3.632504e-02
## 130 -0.135987739 0.0945994839 1.705755e-02
## 131 0.200299093 0.0313989675 1.692872e-03
## 132 0.065671718 0.0172541736 -1.423458e-02
## 133 -0.104235733 0.0228887586 5.827835e-03
## 134 -0.100685126 -0.0425074396 -2.742103e-02
## 135 -0.130879996 -0.0528150549 -1.466273e-02
## 136 -0.230755099 -0.0594404000 -2.306367e-02
## 137 0.043298695 0.0006371650 -5.280929e-03
## 138 0.032367751 0.0096962599 -5.455234e-03
## 139 0.032367751 0.0096962599 -5.455234e-03
## 140 0.026902279 0.0142258073 -5.542386e-03
## 141 0.037833223 0.0051667124 -5.368081e-03
## 142 -0.130105540 0.0796468396 -1.701090e-02
## 143 -0.182463779 0.1060772095 1.699173e-03
## 144 -0.229706376 0.1245310513 -1.294673e-02
## 145 -0.109010210 0.0685047660 -1.594981e-02
## 146 0.043298695 0.0006371650 -5.280929e-03
## 147 0.043298695 0.0006371650 -5.280929e-03
## 148 0.043298695 0.0006371650 -5.280929e-03
## 149 0.444797077 -0.0279182624 1.837335e-02
## 150 0.510328202 -0.0344428974 -1.858313e-02
## 151 0.705662600 -0.0486389170 1.700056e-03
## 152 0.314925810 0.0547209102 1.421780e-02
## 153 0.343144289 0.0634355442 -3.042372e-02
## 154 0.503573194 0.0668597712 2.332854e-03
## 155 0.314925810 0.0547209102 1.421780e-02
## 156 0.330986432 0.0488963804 3.466939e-03
## 157 0.496530979 0.0443440793 2.867533e-03
## 158 0.324855760 0.0515063374 2.117867e-02
## 159 0.346032024 0.0377052795 -2.292817e-02
## 160 0.495529985 0.0501886014 9.654093e-03
## 161 0.295916242 -0.1803988156 7.929493e-03
## 162 0.352649310 -0.2269929350 -2.150799e-02
## 163 0.476310003 -0.2541288269 1.239340e-02
## 164 0.162405043 -0.0605853907 -5.104687e-03
## 165 0.176516687 -0.0856833593 -2.493954e-02
## 166 0.237426033 -0.1091143538 -9.806148e-03

```

```

## 167 0.017968765 0.0051336405 4.472002e-03
## 168 -0.002825084 -0.0023440814 -2.889470e-03
## 169 0.023178770 -0.0081548294 2.471731e-02
## 170 0.025491561 -0.0004619100 -8.725555e-03
## 171 -0.002825084 -0.0023440814 -2.889470e-03
## 172 0.023178770 -0.0081548294 2.471731e-02
## 173 0.022433243 0.0064486151 1.134571e-02
## 174 0.001639394 -0.0010291068 3.984243e-03
## 175 0.040631516 -0.0169649527 1.848062e-02
## 176 0.008058736 -0.2085363965 -1.563570e-02
## 177 -0.012425114 -0.2629451004 -8.093233e-03
## 178 0.008073436 -0.3146042636 8.871963e-04
## 179 0.304651157 -0.0242083350 -2.482757e-02
## 180 0.406062222 0.0143006852 1.727017e-02
## 181 0.283352743 0.0026705482 8.409986e-03
## 182 0.065917946 -0.0355072840 -3.294361e-03
## 183 0.026320527 -0.0317773412 -3.107571e-02
## 184 0.032293898 -0.0499786831 1.017615e-02
## 185 0.316733600 0.0325120929 -1.232381e-02
## 186 0.182320822 0.0841126451 4.490538e-03
## 187 0.306592050 0.0797746619 -6.190349e-03
## 188 0.046387650 0.0330544596 -4.462567e-03
## 189 0.038402970 0.0249430867 -1.857195e-02
## 190 0.039158440 0.0215125533 -1.945699e-02
## 191 0.384752340 0.0466569868 -6.230090e-03
## 192 0.289465390 0.0733801163 4.173092e-03
## 193 0.408577526 0.1213030127 -1.098157e-02
## 194 0.076415129 0.0224790911 -1.137309e-02
## 195 0.043859925 0.0487247258 -3.968912e-02
## 196 0.061182541 0.0446439776 -5.070721e-04
## 197 0.072546374 0.0607410493 -2.012609e-02
## 198 0.101398223 0.1040837726 -6.621018e-03
## 199 0.082679443 0.1373505253 1.139612e-02
## 200 0.074953528 0.0631220270 3.233061e-05
## 201 0.111328173 0.1008691997 3.398470e-04
## 202 0.125628144 0.1364014485 -8.398506e-03
## 203 0.082476324 0.0575264765 -1.316523e-02
## 204 0.111328173 0.1008691997 3.398470e-04
## 205 0.102539343 0.1309213796 2.531785e-02
## 206 0.079418006 0.0644370015 6.906043e-03
## 207 0.115792651 0.1021841743 7.213560e-03
## 208 0.107003821 0.1322363542 3.219156e-02
## 209 0.065083331 -0.1001700473 -1.536174e-03
## 210 0.101418144 -0.1128008372 -1.976785e-02
## 211 0.080391794 -0.1980437466 2.022416e-03
## 212 0.303357198 -0.0280552040 9.463697e-03
## 213 0.335119623 0.0061074779 1.374225e-03
## 214 0.221096148 0.0242868825 -8.868774e-03
## 215 0.091356127 -0.0282232960 -4.387638e-03
## 216 0.078085074 -0.0412965684 -2.494667e-02
## 217 0.038851522 -0.0229085519 3.145922e-03
## 218 0.318497959 0.0217546988 1.896190e-03
## 219 0.352317708 0.0548513777 -1.947799e-02
## 220 0.198157705 0.0963121705 -2.340884e-02

```

```
## 221 0.099454673 -0.0009290850 -1.142047e-02
## 222 0.075602506 -0.0014962819 1.289331e-03
## 223 0.062090828 0.0541955619 -1.145441e-02
## 224 -0.012418000 0.0325166009 -7.241914e-03
## 225 0.072798155 0.0639040353 4.494566e-03
## 226 0.150131976 0.0899994830 -1.090010e-02
## 227 0.034896541 0.0606624970 9.091448e-03
## 228 0.119101995 0.0904538969 2.072892e-02
## 229 0.010197870 0.1312561579 -6.637555e-03
## 230 0.123143608 0.0610862915 3.544371e-02
## 231 0.153917737 0.0824341577 3.517919e-03
## 232 0.066907761 0.0954586920 2.702076e-02
## 233 -0.227684510 -0.0135924901 -3.444604e-02
## 234 -0.274523366 -0.0205527243 2.010054e-02
## 235 -0.353311656 -0.0100089564 -8.443630e-03
## 236 -0.168423325 0.0423622414 -2.878911e-02
## 237 -0.200697169 0.0523221487 1.202524e-02
## 238 -0.270385920 0.0843156055 -3.033832e-02
## 239 -0.218715723 0.0394154218 -2.159422e-03
## 240 -0.240408453 0.0368692535 5.386103e-03
## 241 -0.319196743 0.0474130214 -2.315807e-02
## 242 -0.244150046 -0.2992641027 -2.494084e-02
## 243 -0.206801629 -0.3460124192 7.932680e-03
## 244 -0.173966038 -0.4161424864 -5.811029e-03
## 245 -0.115141098 -0.0232622153 -1.541152e-03
## 246 -0.077046349 -0.0183010308 9.930281e-03
## 247 -0.043765907 -0.0181018014 -1.891513e-02
## 248 -0.226122447 -0.0207175096 -2.148997e-02
## 249 -0.191435845 -0.0122927806 -2.339040e-02
## 250 -0.210754979 -0.0153309159 -2.196513e-02
## 251 -0.133225992 -0.0667650215 1.342226e-03
## 252 -0.075375028 -0.1009227998 -1.329654e-02
## 253 0.360869324 0.1108711272 -3.583418e-02
## 254 0.407938663 0.1297218378 -3.937237e-03
## 255 0.384112636 0.0625346024 -2.102405e-02
## 256 0.009826485 -0.0329537427 2.909114e-02
## 257 -0.149694135 -0.0266092635 -4.277757e-03
## 258 0.147494777 -0.0078581635 1.624553e-03
## 259 0.383482960 0.1940997744 4.785873e-02
## 260 0.397424129 0.0902563457 -3.718166e-03
```

```
index_pca$contrib      # Contributions of the PCs
```

```
##          Dim.1          Dim.2          Dim.3          Dim.4          Dim.5
## 1  3.425486e-02 0.5120156426 1.254318e-01 2.643870e+00 8.999029e-01
## 2  2.149845e-02 0.2996548371 3.559803e-03 2.009999e-01 3.665269e-01
## 3  1.335442e-03 0.3309975344 2.419115e-03 7.034866e-02 5.770670e-01
## 4  2.457246e-01 0.6655757994 2.039836e-01 2.551403e+00 8.167116e-02
## 5  2.445218e-02 0.4014626265 2.710700e-03 2.064511e-01 2.211185e-02
## 6  5.003724e-01 0.3127309486 1.327519e+00 3.493538e+00 1.063505e+00
## 7  2.847027e-01 0.6490498096 2.861765e-01 1.350287e+00 1.213372e-02
## 8  4.105722e-01 0.6117211183 3.929790e-01 1.145110e+00 4.034425e-02
## 9  4.353107e-02 0.4258149675 1.991873e-02 5.221931e-01 1.053374e-02
## 10 1.089126e-01 0.3932882894 5.944254e-02 6.783238e-01 2.266838e-01
```



```

## 11 1.748313e-02 0.3350366142 2.264401e-02 2.304611e-01 1.949103e+00
## 12 5.469925e-02 0.3112830155 5.659705e-02 3.215367e-01 2.873008e+00
## 13 3.394475e-01 0.6428157017 2.827948e-01 1.431076e+00 2.317628e-01
## 14 4.800030e-01 0.5937722558 3.999474e-01 1.212625e+00 6.302776e-01
## 15 6.214261e-02 0.4028023589 2.244517e-02 4.416863e-01 5.972868e-01
## 16 1.357314e-01 0.3805136156 6.060518e-02 5.829868e-01 1.339755e+00
## 17 2.627778e-02 0.3145615131 3.222635e-02 4.403502e-01 1.601773e-01
## 18 7.251598e-02 0.2887424272 7.368112e-02 5.707945e-01 5.058532e-01
## 19 8.837717e-01 0.3748866412 1.002825e+00 2.080102e+00 3.757736e-02
## 20 2.609817e-01 0.3346121321 4.538777e-01 1.385682e+00 2.814399e-01
## 21 3.373386e-02 0.1682422537 8.366278e-02 4.960059e-01 1.150641e-01
## 22 1.209403e-02 0.1211380640 8.872249e-02 1.716121e-01 8.755673e-01
## 23 4.820143e-01 0.3884472792 5.619433e-01 1.419039e+00 2.349984e-03
## 24 1.432772e-01 0.2241282066 1.272379e-01 4.841786e-01 1.040549e-01
## 25 9.909975e-01 0.3369989471 7.836170e-05 1.066559e+00 4.288163e-01
## 26 4.358064e-01 0.1688464839 1.536394e-01 6.800503e-01 1.318414e-01
## 27 1.671028e+00 0.1115164572 2.511068e+00 1.886005e+00 3.493474e-01
## 28 2.037580e+00 1.1364250995 1.588748e+00 1.094454e+01 6.781158e-02
## 29 2.360425e+00 1.1133687212 1.818097e+00 1.031319e+01 3.736914e-03
## 30 4.301812e-01 0.4245406641 1.458236e-01 1.386051e+00 8.034865e-01
## 31 5.738622e-01 0.3977469257 2.202337e-01 1.598417e+00 1.428661e+00
## 32 4.430196e+00 0.3760109049 4.305980e+00 7.354782e+00 4.599398e-02
## 33 4.891780e+00 0.3597741358 4.673594e+00 6.857107e+00 1.153261e-02
## 34 1.825419e+00 0.0423804704 1.417774e+00 3.234030e+00 8.356731e-01
## 35 2.132358e+00 0.0341772615 1.648086e+00 3.586240e+00 1.500253e+00
## 36 1.877140e-02 0.0048436836 1.095132e-01 9.169014e-02 1.786408e-01
## 37 7.536700e-02 0.0484493936 2.282542e-01 2.109983e-01 6.531060e-01
## 38 2.080568e-04 0.4075752991 1.191912e-02 2.152345e-01 3.294783e-02
## 39 2.918457e-01 0.2289102618 6.167642e-02 3.618524e-04 9.438148e-01
## 40 1.069537e-03 0.0515133747 2.625487e-01 8.441986e-02 1.407516e+00
## 41 1.243155e-01 0.0561671897 1.012648e-01 1.816300e-02 3.220681e-02
## 42 1.671199e-01 0.0008759559 2.218436e-02 9.220385e-03 8.011516e-02
## 43 3.376256e-01 0.0328731900 1.600778e+00 7.171106e-03 4.295332e-02
## 44 5.465109e-01 0.0224191751 4.514993e+00 9.369124e-04 1.715220e-01
## 45 9.732012e-01 0.0410796096 3.994672e+00 9.420286e-02 6.692171e-01
## 46 9.062899e-01 0.0312505844 4.202398e+00 4.967924e-02 4.308346e-01
## 47 5.202214e-01 0.0060392427 4.459656e+00 5.056060e-03 3.368392e-02
## 48 2.258022e+00 0.0026965478 1.284959e+01 2.032470e-02 7.013742e-01
## 49 6.831606e-02 0.1575227050 5.457777e-04 2.115250e-02 1.352070e-02
## 50 6.956354e-04 0.0953122563 5.775438e-01 2.699224e-03 2.528123e-02
## 51 2.076343e-01 0.1052196963 1.997225e+00 9.477039e-04 8.843268e-02
## 52 1.445202e+00 0.0368686990 3.572163e+00 1.390418e-01 5.296054e-02
## 53 9.601503e-02 0.0661770993 2.201845e+00 3.202961e-03 1.351240e-01
## 54 2.665536e-01 0.1309019142 2.006241e+00 6.136563e-03 2.455529e-01
## 55 1.392734e-01 0.0596600572 2.125989e+00 8.445274e-03 2.244858e-04
## 56 1.927321e-01 0.1010523347 2.023838e+00 8.039121e-05 2.512944e-03
## 57 1.137421e-01 0.2169625052 9.360354e-02 1.812694e-01 4.650020e-02
## 58 1.112844e-01 0.1380091877 1.208439e-01 5.384676e-01 7.229137e-03
## 59 1.384745e-02 0.2396439337 1.706821e-02 2.043933e-01 2.236604e+00
## 60 6.238484e-01 0.2981382313 2.564078e-01 9.004283e-01 2.028863e-01
## 61 3.282148e-01 0.4546216010 7.942917e-02 4.455792e-01 3.469721e+00
## 62 4.172351e-01 0.2634489118 2.146047e-01 8.651928e-01 1.768012e-01
## 63 1.823305e-01 0.4083116852 5.643951e-02 4.163990e-01 3.357879e+00
## 64 1.118132e+00 0.1373545989 1.657569e-02 8.792181e-01 4.712916e-03

```

```

## 65 5.670099e-01 0.4188022849 2.049106e-01 6.360426e-01 2.340741e+00
## 66 3.131279e-02 0.2170511626 3.857937e-02 3.004718e-01 6.263660e-03
## 67 4.629049e-05 0.1913756467 1.848980e-02 1.364352e-01 1.125702e-01
## 68 1.250998e-01 0.3473252437 8.112821e-02 3.099090e-01 1.683503e-02
## 69 6.449366e-02 0.3404437943 5.261203e-02 3.595826e-01 1.278503e-02
## 70 9.674949e-04 0.2354861830 2.490325e-02 1.895816e-01 1.085874e-01
## 71 6.668256e-01 0.2153063656 1.072025e-01 5.946654e-01 9.730978e-03
## 72 2.603247e-01 0.5203836182 6.479030e-02 4.560494e-01 2.375539e+00
## 73 4.709305e-01 0.1309256201 1.234490e-01 4.784452e-01 9.699810e-02
## 74 2.033296e-01 0.2277676423 3.357863e-01 1.808855e-01 9.873716e-01
## 75 6.354990e-01 0.0631511949 3.584917e-02 7.247367e-01 2.437721e-01
## 76 2.513128e-01 0.2678465227 1.642565e-01 5.173580e-01 9.100661e-01
## 77 1.826942e-01 0.1195641465 2.298657e-01 6.209446e-01 1.791389e-03
## 78 4.110839e-02 0.2186356188 6.040905e-02 2.996692e-01 1.829473e+00
## 79 1.411991e-01 0.3411614542 6.374242e-02 8.726665e-07 1.554158e-01
## 80 2.467653e-02 0.3802176669 1.739809e-02 1.250559e-02 2.152430e-01
## 81 8.450816e-02 0.4644888656 1.004491e-02 1.670010e-01 2.945970e-01
## 82 1.955807e+00 0.7263022916 4.670676e-01 1.130701e+00 4.764876e-01
## 83 1.428367e+01 0.7538810193 5.869416e-02 4.653173e+00 1.585578e+00
## 84 7.741833e-05 0.1636583601 1.482995e-02 8.809984e-02 2.062015e-01
## 85 2.174581e-01 0.2922924127 8.016088e-02 4.733730e-03 3.006764e-04
## 86 2.726429e-02 0.4894324217 2.964701e-05 1.083519e-01 2.202166e-01
## 87 3.517279e-03 0.6581657268 5.472972e-02 7.594576e-03 3.515690e+00
## 88 2.891137e-01 0.1345228149 4.517419e-02 1.832176e-03 2.182320e-02
## 89 5.237312e-02 0.1841191464 4.631694e-02 2.931073e-01 1.473947e-02
## 90 5.394931e-07 0.3042110803 1.292111e-04 6.457213e-02 2.543043e+00
## 91 2.031895e-03 0.1790629413 1.106147e-02 1.448520e-01 5.323672e-02
## 92 2.500749e-02 0.2358534259 5.688774e-05 5.697312e-02 2.561066e-01
## 93 4.243572e-03 0.2408610386 2.599163e-03 9.716092e-02 6.396130e-02
## 94 3.175657e-02 0.3061022619 3.811078e-03 2.883293e-02 2.341543e-01
## 95 5.600593e-04 0.2970458491 3.993265e-03 1.167013e-01 2.337691e-01
## 96 1.161610e-02 0.3536513414 2.820230e-03 4.610156e-02 2.135257e-02
## 97 2.094310e-01 0.0960556458 1.127744e-02 1.298525e-03 1.274696e+00
## 98 7.584494e-02 0.0474360230 4.288331e-03 4.806249e-02 1.982498e+00
## 99 7.254188e-06 0.0036828815 1.223639e-01 2.320305e-01 3.824488e+00
## 100 4.198405e-01 0.1715860633 8.886182e-02 1.785136e-02 4.699074e-01
## 101 6.198181e-01 0.2226680590 1.890924e-01 6.098762e-02 5.463268e-02
## 102 6.439142e-01 0.2062547448 1.827936e-01 7.848750e-02 9.421550e-02
## 103 3.177503e-01 0.0049357989 1.728641e-03 5.173005e-03 1.308428e-03
## 104 1.688824e-01 0.0303788241 3.957329e-05 2.728699e-03 1.291965e+00
## 105 2.957136e-01 0.0545147943 1.688996e-02 2.508273e-02 4.244962e-01
## 106 3.093488e-01 0.0642485011 1.761114e-02 2.145121e-02 2.900073e-01
## 107 5.504219e-01 0.1706653120 1.342206e-01 7.186063e-02 8.980235e-02
## 108 5.700418e-02 0.1007441904 1.569828e-01 9.919534e-04 2.474057e-04
## 109 5.356088e-02 0.1115077941 1.990554e-01 1.871708e-04 1.089685e-02
## 110 1.190373e-01 0.0824677594 1.036991e-01 8.091727e-03 3.960320e-04
## 111 3.828243e-01 0.0448868325 1.420836e-02 2.546798e-02 1.432230e-02
## 112 2.833231e-01 0.2613161604 1.358954e-01 1.013255e-02 1.791620e-03
## 113 1.759280e-01 0.8208974946 4.841936e-01 6.241459e-04 3.302832e-03
## 114 4.580356e-01 0.0000306976 2.635179e-03 3.931743e-02 3.036634e-02
## 115 6.749609e-01 0.2721604707 2.337237e-01 8.550907e-02 9.928031e-02
## 116 6.716866e-01 0.2747919541 2.326140e-01 8.348843e-02 9.908178e-02
## 117 6.667900e-01 0.2787629178 2.309546e-01 8.050276e-02 9.878436e-02
## 118 6.733228e-01 0.2734746299 2.331685e-01 8.449573e-02 9.918102e-02

```

```

## 119 3.804222e-01 0.0209326861 7.450326e-03 2.088164e-02 2.517818e-02
## 120 2.839535e-01 0.1915103041 1.108732e-01 7.277285e-03 4.724561e-03
## 121 1.777264e-01 0.6249844402 4.036294e-01 1.920273e-05 1.719163e-04
## 122 4.547004e-01 0.0008963058 4.477490e-03 3.539606e-02 3.745125e-02
## 123 6.214073e-01 0.3020245337 2.377945e-01 4.837494e-02 1.785130e-02
## 124 5.954605e-01 0.3175394346 2.398431e-01 3.374748e-02 1.837774e-03
## 125 5.670581e-01 0.3363549592 2.407716e-01 2.073341e-02 2.321836e-03
## 126 6.446995e-01 0.2895998361 2.346402e-01 6.386006e-02 5.019082e-02
## 127 3.835040e-01 0.0284613034 9.008879e-03 2.328731e-02 1.889770e-02
## 128 2.783276e-01 0.2335989272 1.291471e-01 7.828489e-03 2.543797e-03
## 129 1.722240e-01 0.7337354111 4.548544e-01 8.664899e-05 1.637432e-03
## 130 4.557096e-01 0.0003443118 3.884640e-03 3.660257e-02 3.343073e-02
## 131 3.416474e-01 0.1428156838 8.120619e-02 3.413262e-03 7.783118e-02
## 132 3.006116e-01 0.0328228970 1.924059e-02 1.963422e-03 3.149054e-01
## 133 5.015736e-01 0.0220090423 2.755541e-02 4.499507e-02 5.608021e-02
## 134 3.711728e-01 0.0052082382 5.127244e-04 1.120653e-02 1.799029e-03
## 135 2.959944e-01 0.0596195106 2.842811e-02 1.733040e-03 6.683563e-03
## 136 1.718400e-01 0.3766646100 2.352430e-01 4.819450e-03 5.650241e-02
## 137 6.782432e-01 0.2695416480 2.348359e-01 8.755388e-02 9.947905e-02
## 138 6.749609e-01 0.2721604707 2.337237e-01 8.550907e-02 9.928031e-02
## 139 6.749609e-01 0.2721604707 2.337237e-01 8.550907e-02 9.928031e-02
## 140 6.733228e-01 0.2734746299 2.331685e-01 8.449573e-02 9.918102e-02
## 141 6.766011e-01 0.2708494768 2.342795e-01 8.652845e-02 9.937966e-02
## 142 3.725373e-01 0.0231508652 6.039238e-03 1.703575e-02 4.871275e-03
## 143 3.185094e-01 0.1025614356 4.666081e-02 1.004121e-02 4.765419e-04
## 144 2.630107e-01 0.2410460519 1.287470e-01 4.218308e-03 1.964217e-04
## 145 4.536349e-01 0.0001190154 3.614563e-03 3.737544e-02 3.825581e-02
## 146 6.782432e-01 0.2695416480 2.348359e-01 8.755388e-02 9.947905e-02
## 147 6.782432e-01 0.2695416480 2.348359e-01 8.755388e-02 9.947905e-02
## 148 6.782432e-01 0.2695416480 2.348359e-01 8.755388e-02 9.947905e-02
## 149 2.035809e-01 0.1393994842 4.172537e-02 1.191694e-02 4.638544e-03
## 150 1.429429e-01 0.1127159216 2.073556e-02 4.328828e-03 2.271067e-03
## 151 4.894950e-02 0.0768449809 1.055020e-03 3.535794e-04 2.481318e-02
## 152 9.858320e-02 0.0116766144 3.708033e-02 3.298094e-04 3.110163e-03
## 153 4.056227e-02 0.0773811126 1.320595e-01 2.712693e-03 4.030354e-02
## 154 1.934003e-04 0.2013878962 3.216210e-01 2.461485e-02 1.173749e-01
## 155 9.858320e-02 0.0116766144 3.708033e-02 3.298094e-04 3.110163e-03
## 156 4.292325e-02 0.0704561005 1.251282e-01 2.360322e-03 4.081899e-02
## 157 2.004089e-04 0.1924032130 3.157931e-01 2.506932e-02 1.100647e-01
## 158 1.063040e-01 0.0048764884 2.570517e-02 7.046230e-04 2.415717e-03
## 159 4.567361e-02 0.0528187769 1.062787e-01 2.037723e-03 3.359831e-02
## 160 5.868395e-04 0.1583207266 2.818224e-01 2.353909e-02 1.059218e-01
## 161 1.559802e-01 0.0915538456 1.079503e-02 2.378227e-03 1.656879e-02
## 162 8.798199e-02 0.0661188539 6.522023e-04 1.361313e-03 3.874832e-03
## 163 2.027839e-02 0.0321756023 1.211724e-02 1.112679e-02 6.351163e-03
## 164 3.429220e-01 0.1167508716 7.657436e-02 1.175103e-03 3.608823e-01
## 165 2.808011e-01 0.0851573209 4.889571e-02 1.386343e-02 5.950402e-01
## 166 1.819350e-01 0.0515642904 1.786395e-02 5.066293e-02 1.243878e+00
## 167 1.983438e-01 0.0217308755 1.659289e-02 1.649853e-02 5.229310e-01
## 168 1.288867e-01 0.0956976246 7.651277e-02 5.387972e-02 8.570498e-01
## 169 5.061530e-02 0.2363469315 2.081879e-01 1.293635e-01 1.694295e+00
## 170 2.012647e-01 0.0167981817 1.321306e-02 1.605937e-02 5.094681e-01
## 171 1.288867e-01 0.0956976246 7.651277e-02 5.387972e-02 8.570498e-01
## 172 5.061530e-02 0.2363469315 2.081879e-01 1.293635e-01 1.694295e+00

```

```

## 173 2.083227e-01 0.0116487616 9.438830e-03 1.483533e-02 5.136280e-01
## 174 1.369546e-01 0.0728275478 6.000035e-02 5.083845e-02 8.451282e-01
## 175 5.774846e-02 0.1850054233 1.682448e-01 1.221966e-01 1.652928e+00
## 176 2.791449e-01 0.0740724416 3.089773e-02 9.295913e-03 2.919019e-01
## 177 2.168022e-01 0.0433416858 1.044457e-02 3.532216e-02 5.014753e-01
## 178 1.208920e-01 0.0167040208 7.926922e-05 9.719689e-02 1.076334e+00
## 179 3.985917e-02 0.0426200816 1.151182e-01 4.403668e-05 1.201805e-05
## 180 2.683017e-03 0.1426486208 2.724493e-01 1.023851e-02 1.574222e-02
## 181 4.206152e-02 0.4810585449 6.341813e-03 1.716893e-03 3.214703e-02
## 182 1.019356e-01 0.0538128166 7.223033e-02 2.021236e-02 3.369785e-01
## 183 4.890053e-02 0.1685583781 1.906592e-01 6.641975e-02 6.097282e-01
## 184 6.903941e-03 0.3525829769 3.913632e-01 1.522344e-01 1.334992e+00
## 185 4.808570e-02 0.0210861442 8.262382e-02 3.738884e-04 1.572406e-04
## 186 1.699389e-05 0.2032396228 1.176534e-01 5.901206e-03 1.772850e-04
## 187 3.281985e-02 0.3652324034 2.337924e-02 7.467768e-04 3.268337e-02
## 188 1.221908e-01 0.0313754020 4.948521e-02 1.074518e-02 2.497775e-01
## 189 5.797093e-02 0.1220265513 1.480697e-01 6.003485e-02 6.239796e-01
## 190 1.245620e-02 0.2562147457 3.045659e-01 1.405171e-01 1.410308e+00
## 191 2.076109e-02 0.0507873849 1.445212e-01 1.281404e-06 2.058943e-05
## 192 1.050790e-02 0.2955020140 5.319361e-02 5.461846e-03 5.388421e-03
## 193 8.359228e-02 0.5304014605 8.863919e-05 2.416198e-04 1.557640e-02
## 194 8.605125e-02 0.0669292698 8.723351e-02 3.319246e-02 4.763315e-01
## 195 3.800796e-02 0.2001796102 2.194016e-01 8.779155e-02 8.124505e-01
## 196 2.362931e-03 0.4013089788 4.325267e-01 2.073759e-01 1.981150e+00
## 197 3.541283e-01 0.0155653897 6.620629e-03 7.273626e-02 1.715799e-01
## 198 2.538930e-01 0.0001212105 5.182548e-03 9.519706e-02 2.688770e-01
## 199 1.311471e-01 0.0782151512 1.154481e-01 8.367658e-02 2.249840e-01
## 200 3.646745e-01 0.0210777252 9.947300e-03 7.637468e-02 1.693089e-01
## 201 2.661955e-01 0.0007407631 1.580515e-03 1.004410e-01 2.757850e-01
## 202 1.462954e-01 0.0477298405 8.055630e-02 9.364367e-02 2.392750e-01
## 203 3.686313e-01 0.0265650417 1.290529e-02 7.732887e-02 1.771071e-01
## 204 2.661955e-01 0.0007407631 1.580515e-03 1.004410e-01 2.757850e-01
## 205 1.492038e-01 0.0412970129 7.579457e-02 9.365877e-02 2.377172e-01
## 206 3.781618e-01 0.0341016158 1.726488e-02 8.009235e-02 1.746679e-01
## 207 2.777365e-01 0.0044490892 6.554452e-05 1.046979e-01 2.826131e-01
## 208 1.578750e-01 0.0268082118 5.936455e-02 9.777093e-02 2.440596e-01
## 209 4.485841e-01 0.2191680613 1.123509e-01 9.176296e-02 2.998759e-01
## 210 3.587111e-01 0.1996243871 7.013767e-02 1.217700e-01 5.012819e-01
## 211 2.593210e-01 0.1783434952 3.140917e-02 1.242582e-01 5.815409e-01
## 212 7.823928e-02 0.0048996568 4.582328e-02 1.111459e-02 3.658225e-02
## 213 3.146932e-02 0.0496516338 1.391077e-01 4.256238e-03 3.788138e-02
## 214 2.349463e-02 0.4677726532 1.067505e-02 1.177989e-03 5.887556e-03
## 215 1.439568e-01 0.0096715766 2.802301e-02 1.745113e-04 3.874420e-02
## 216 8.781364e-02 0.0587938255 9.080066e-02 7.875177e-03 1.521751e-01
## 217 1.029299e-02 0.3271244937 3.868334e-01 6.911104e-02 5.792948e-01
## 218 8.500214e-02 0.0009266114 3.240394e-02 1.281440e-02 3.426203e-02
## 219 3.667381e-02 0.0269632966 1.060335e-01 5.328701e-03 3.907673e-02
## 220 1.481649e-02 0.3706033924 2.635453e-02 5.052134e-03 1.701661e-04
## 221 1.532758e-01 0.0023680093 1.643173e-02 3.819489e-04 3.692553e-02
## 222 9.793958e-02 0.0356908392 6.666101e-02 6.273389e-03 1.581640e-01
## 223 1.572038e-02 0.2330077343 3.010631e-01 6.189229e-02 5.815644e-01
## 224 2.247884e-02 0.6173881307 8.807892e-01 2.923879e-01 4.702269e-01
## 225 1.092047e-01 1.0534984621 4.599232e-01 2.296098e-01 5.007619e-01
## 226 2.879341e-01 1.7504620613 1.294879e-01 2.012434e-01 5.023682e-01

```

```

## 227 2.436520e-02 0.6003171446 8.955045e-01 2.931961e-01 5.558773e-01
## 228 1.172140e-01 1.0232253427 4.596942e-01 2.747968e-01 5.631252e-01
## 229 4.006359e-01 2.0990611305 1.379055e+00 4.071041e-01 6.385409e-01
## 230 8.317522e-02 0.9354795365 5.700707e-01 1.931194e-01 8.224963e-01
## 231 2.050718e-01 1.4789260618 2.335105e-01 2.060170e-01 8.846496e-01
## 232 6.085511e-01 2.8123205956 8.973293e-01 2.735670e-01 9.333948e-01
## 233 2.504498e-01 0.1152658364 7.767955e-02 4.903327e-03 1.288167e-04
## 234 1.784157e-01 0.2839332901 2.014570e-01 1.424817e-05 8.167859e-03
## 235 9.562204e-02 0.6992016539 5.063711e-01 1.103228e-02 5.388120e-02
## 236 2.523940e-01 0.0929901936 5.939066e-02 3.043423e-03 9.080465e-03
## 237 1.826273e-01 0.2406954048 1.641282e-01 2.392744e-04 3.939757e-02
## 238 9.998521e-02 0.6162196830 4.352782e-01 1.329492e-02 1.168707e-01
## 239 2.555089e-01 0.1275514539 8.095745e-02 6.060508e-03 5.040148e-04
## 240 1.813981e-01 0.2988589340 2.023963e-01 1.607458e-05 1.285267e-02
## 241 9.780868e-02 0.7225149529 5.078596e-01 9.457690e-03 6.508451e-02
## 242 7.579843e-02 1.0161291063 5.148689e-01 8.466735e-02 4.901379e-02
## 243 2.651815e-01 1.8141967212 1.227955e-01 4.485981e-02 1.989484e-02
## 244 6.326240e-01 2.9774320610 4.019553e-03 6.151693e-03 1.128972e-04
## 245 1.038566e-01 1.4312139439 3.549561e-01 6.931741e-02 2.459089e-03
## 246 3.285597e-01 2.4755128217 3.952901e-02 3.127643e-02 2.499731e-03
## 247 7.085038e-01 3.9651151489 5.516942e-02 5.943594e-03 2.075989e-02
## 248 1.199072e-01 1.3601429705 3.407130e-01 5.039493e-02 6.779609e-03
## 249 3.551413e-01 2.3194443640 3.978415e-02 1.857848e-02 6.714142e-05
## 250 7.459140e-01 3.7603313294 5.174380e-02 1.582796e-03 6.145947e-02
## 251 2.703478e-01 2.1488682330 8.256033e-02 5.090717e-02 1.134754e-04
## 252 6.381981e-01 3.4866965311 1.840446e-02 9.725252e-03 2.636951e-02
## 253 1.429683e-01 1.4283030832 1.198007e-01 4.927352e-03 1.561036e-01
## 254 9.426439e-01 4.0996587150 6.815654e-02 2.505842e-02 1.028036e-01
## 255 6.445876e-03 0.2685561126 3.645837e-01 1.169616e-03 7.805165e-02
## 256 3.789201e-02 0.6196663094 3.404193e-04 6.342197e-04 4.357002e-02
## 257 3.408438e-01 1.7507814136 1.264201e-01 3.963663e-03 1.208905e-01
## 258 4.259349e-02 0.0644803721 1.497478e-01 1.241322e-04 3.495885e-02
## 259 6.973080e-01 2.3153471001 2.368215e-02 6.806173e-02 9.309595e-02
## 260 7.125690e-03 0.1241623530 2.392684e-01 1.300292e-02 1.008881e-01
##      Dim.6      Dim.7      Dim.8
## 1  1.042925e-01 3.357979e-01 6.390092e-01
## 2  3.464697e-01 7.408602e-02 2.288625e+00
## 3  1.282306e-01 2.784886e-02 8.121181e-01
## 4  9.620267e-01 6.331831e-02 1.981056e-01
## 5  3.730184e-01 1.341090e-03 1.347011e+00
## 6  5.482759e-02 8.889923e-02 1.807706e-01
## 7  3.814009e-01 6.993791e-01 3.689680e-02
## 8  4.523739e-01 9.332354e-01 4.397191e-01
## 9  7.815907e-01 1.151478e+00 9.802005e-01
## 10 8.513520e-01 1.477285e+00 1.821815e-03
## 11 1.520767e-01 1.017391e+00 1.143224e+00
## 12 2.084351e-01 1.364960e+00 1.524270e-01
## 13 6.672234e-02 3.927485e-01 6.222180e-05
## 14 2.902443e-02 4.802676e-01 3.077351e-05
## 15 7.824938e-03 1.053186e+00 1.694121e+00
## 16 1.398963e-02 1.103000e+00 5.973672e-02
## 17 9.298673e-01 2.376539e-01 1.477179e-03
## 18 1.038987e+00 3.809973e-01 1.871373e-01
## 19 9.876124e-01 1.227851e+00 1.195686e-01

```

```

## 20 1.004939e+00 6.966393e-01 6.914546e-01
## 21 1.683612e+00 1.259586e+00 6.120826e-04
## 22 5.972035e-01 1.244013e+00 3.371980e-01
## 23 7.092247e-02 1.349709e+00 1.575760e-01
## 24 2.104685e-01 2.075434e+00 2.512940e-02
## 25 5.600305e-01 4.604620e-02 4.002626e-01
## 26 1.145763e+00 2.280236e-02 4.290569e-01
## 27 1.295667e+00 4.167714e-02 3.521024e-03
## 28 5.905214e-01 4.782696e-02 1.976954e-01
## 29 4.526696e-01 8.880151e-02 1.953219e-04
## 30 1.170653e-02 8.671503e-01 2.878842e-01
## 31 3.054582e-02 1.189989e+00 2.023475e-02
## 32 7.792746e-01 2.222653e+00 1.459900e-03
## 33 9.095400e-01 2.089522e+00 1.717175e-01
## 34 2.525507e+00 6.635934e-01 3.257346e-01
## 35 2.785258e+00 4.236666e-01 8.778801e-03
## 36 2.188271e+00 2.772475e+00 2.006501e-01
## 37 3.120324e-01 6.360048e-01 2.948970e-05
## 38 1.169903e-01 9.665528e-02 5.203264e-01
## 39 6.291654e-02 1.094476e-04 5.130159e-01
## 40 1.429453e-02 1.181034e+00 1.813167e-02
## 41 5.059612e-01 1.847038e+00 6.701900e-02
## 42 3.150898e-01 4.133299e+00 6.156720e-01
## 43 8.901729e-02 3.495860e-01 6.759192e-02
## 44 2.983187e-01 2.544527e-03 4.314666e-02
## 45 6.001936e-01 2.443074e-01 4.559455e-03
## 46 3.783612e-03 1.417251e-01 5.609693e-02
## 47 1.008450e-01 5.249895e-01 3.671500e-03
## 48 7.218569e-01 7.154089e-02 1.197305e-02
## 49 1.106901e-01 7.063914e-01 8.049266e-01
## 50 6.568435e-01 1.042772e-01 3.174256e-03
## 51 4.829673e-01 9.821451e-02 4.558709e-01
## 52 3.092032e-02 3.341117e-01 8.404116e-04
## 53 4.327633e-01 4.602067e-02 1.275937e-01
## 54 3.225388e-01 1.850161e-01 3.401309e-01
## 55 1.181408e-03 1.860260e-01 7.738134e-01
## 56 4.575925e-01 1.443573e-01 2.364918e-01
## 57 1.989262e-01 4.577567e-05 1.366092e-01
## 58 7.585288e-03 9.971898e-01 2.642849e-01
## 59 2.004487e-02 1.416814e+00 1.676506e+00
## 60 3.981549e-01 7.515677e-02 8.690868e-02
## 61 3.419035e-01 1.357590e-01 3.553816e-01
## 62 9.009392e-04 6.424153e-03 1.092552e-01
## 63 2.659646e-03 4.343962e-02 5.379180e-04
## 64 7.816205e-02 5.093008e-01 3.960945e-01
## 65 1.642331e-02 3.939366e-01 1.510945e-01
## 66 5.050336e-03 2.664177e-01 1.501176e-01
## 67 2.820725e-01 2.138825e-01 3.276256e-03
## 68 2.130674e-01 3.372478e-01 4.744422e-01
## 69 6.589958e-01 7.015827e-01 5.190387e-03
## 70 1.001340e+00 3.342737e-02 2.937811e-02
## 71 2.981473e-01 4.384398e-02 1.178337e+00
## 72 7.024707e-03 2.247274e-02 2.799907e-02
## 73 2.337890e-01 1.633807e-02 1.087528e-02

```

```

## 74 3.297769e-01 4.231801e-02 3.163909e-03
## 75 8.858929e-01 2.728233e-02 6.466218e-01
## 76 3.078638e-01 1.186963e-01 1.356619e-01
## 77 7.280876e-01 1.789044e-02 5.316019e-02
## 78 7.613461e-01 6.555770e-02 2.930302e-01
## 79 3.059740e-01 8.277712e-04 9.363775e-03
## 80 5.448123e-01 1.039016e-04 3.291670e-01
## 81 1.424128e+00 1.710072e-03 7.268211e-01
## 82 5.042017e+00 4.862231e-03 1.398265e-01
## 83 1.177677e+01 5.594441e-04 3.191891e-01
## 84 1.202953e-01 1.268112e+00 7.663028e-02
## 85 1.623534e-01 2.926320e-02 1.027360e-01
## 86 1.159761e+00 2.535547e-01 3.263347e-01
## 87 1.152559e+00 2.168472e-01 7.780222e-02
## 88 6.973211e-03 5.745571e-01 2.225849e-01
## 89 3.314112e-01 6.904095e-02 6.918905e-01
## 90 2.304800e-01 1.875876e-01 1.055611e-02
## 91 1.849100e-01 3.987619e-03 6.449484e-02
## 92 2.402653e-01 1.725140e-02 3.862510e-01
## 93 9.066823e-02 1.943099e-01 1.643927e-01
## 94 1.305150e-01 2.590839e-01 5.975078e-01
## 95 1.692786e-03 7.903140e-04 6.402403e-01
## 96 4.030744e-03 5.602656e-04 8.556688e-04
## 97 1.477451e-04 3.142798e+00 2.626918e-02
## 98 1.869801e-03 7.099117e+00 8.922227e-03
## 99 8.627578e-04 1.635615e+01 1.761466e-01
## 100 1.493256e-04 7.944039e-01 1.330499e-02
## 101 4.611657e-03 2.333737e-02 2.553495e-02
## 102 9.789543e-04 1.846326e-03 4.705635e-03
## 103 8.394195e-03 7.256221e-02 6.771248e-02
## 104 5.091461e-02 4.122543e-01 8.653789e-02
## 105 1.146138e-01 1.753275e-07 6.652222e-02
## 106 8.445727e-06 1.798653e-02 3.307527e-02
## 107 2.125405e-02 1.194695e-04 2.039126e-02
## 108 9.311130e-02 7.639454e-02 8.905741e-01
## 109 8.425086e-03 4.777953e-01 3.492442e-02
## 110 3.106621e-02 1.005203e-02 1.068062e+00
## 111 1.628191e-01 1.615032e-01 2.140271e+00
## 112 3.826704e-01 3.307171e-01 3.385636e+00
## 113 7.801336e-01 6.027745e-01 4.818439e+00
## 114 6.900089e-02 8.452550e-02 1.119270e+00
## 115 5.355416e-03 1.321487e-03 3.536250e-02
## 116 2.349029e-03 4.944302e-03 3.765839e-02
## 117 1.298664e-04 1.470421e-02 4.123762e-02
## 118 3.699528e-03 2.844515e-03 3.650142e-02
## 119 2.627055e-01 1.182854e-01 3.168738e-01
## 120 6.026108e-01 3.575823e-01 4.329609e+00
## 121 1.142112e+00 7.093673e-01 2.282999e+00
## 122 1.127183e-01 8.250176e-02 3.641200e-01
## 123 4.602881e-03 2.290515e-02 5.162160e-01
## 124 4.247969e-03 4.361439e-02 1.372991e+00
## 125 1.428419e-03 9.018018e-02 2.621174e+00
## 126 2.097520e-03 1.633587e-02 6.718865e-02
## 127 1.968106e-01 2.132670e-01 2.862956e-01

```

128 4.906315e-01 4.760388e-01 1.852425e+00
129 9.705432e-01 8.486611e-01 1.567936e+00
130 9.452958e-02 1.257859e-01 3.457401e-01
131 2.050813e-01 1.385751e-02 3.405373e-03
132 2.204575e-02 4.184492e-03 2.407717e-01
133 5.553943e-02 7.363748e-03 4.035810e-02
134 5.182017e-02 2.539711e-02 8.934775e-01
135 8.756181e-02 3.920757e-02 2.554734e-01
136 2.721892e-01 4.966127e-02 6.320813e-01
137 9.583360e-03 5.706348e-06 3.313880e-02
138 5.355416e-03 1.321487e-03 3.536250e-02
139 5.355416e-03 1.321487e-03 3.536250e-02
140 3.699528e-03 2.844515e-03 3.650142e-02
141 7.316694e-03 3.752174e-04 3.424163e-02
142 8.652862e-02 8.916440e-02 3.438515e-01
143 1.701851e-01 1.581607e-01 3.430767e-03
144 2.697207e-01 2.179765e-01 1.991758e-01
145 6.074388e-02 6.596233e-02 3.022926e-01
146 9.583360e-03 5.706348e-06 3.313880e-02
147 9.583360e-03 5.706348e-06 3.313880e-02
148 9.583360e-03 5.706348e-06 3.313880e-02
149 1.011328e+00 1.095547e-02 4.011372e-01
150 1.331274e+00 1.667454e-02 4.103497e-01
151 2.545437e+00 3.325234e-02 3.434336e-03
152 5.069729e-01 4.208827e-02 2.402046e-01
153 6.018964e-01 5.656135e-02 1.099869e+00
154 1.296264e+00 6.283248e-02 6.466827e-03
155 5.069729e-01 4.208827e-02 2.402046e-01
156 5.600007e-01 3.360530e-02 1.428264e-02
157 1.260262e+00 2.763921e-02 9.770866e-03
158 5.394477e-01 3.728857e-02 5.329832e-01
159 6.120696e-01 1.998291e-02 6.246765e-01
160 1.255186e+00 3.540500e-02 1.107488e-01
161 4.476162e-01 4.574270e-01 7.471487e-02
162 6.357030e-01 7.242343e-01 5.496874e-01
163 1.159705e+00 9.077417e-01 1.825144e-01
164 1.348240e-01 5.159294e-02 3.096381e-02
165 1.592721e-01 1.031923e-01 7.390829e-01
166 2.881541e-01 1.673471e-01 1.142650e-01
167 1.650459e-03 3.704293e-04 2.376403e-02
168 4.079726e-05 7.723245e-05 9.920934e-03
169 2.746306e-03 9.347257e-04 7.259697e-01
170 3.321705e-03 2.998949e-06 9.046953e-02
171 4.079726e-05 7.723245e-05 9.920934e-03
172 2.746306e-03 9.347257e-04 7.259697e-01
173 2.572482e-03 5.845038e-04 1.529607e-01
174 1.373836e-05 1.488591e-05 1.886287e-02
175 8.439063e-03 4.045384e-03 4.058346e-01
176 3.319725e-04 6.112490e-01 2.905031e-01
177 7.891671e-04 9.718172e-01 7.783238e-02
178 3.331847e-04 1.391181e+00 9.353102e-04
179 4.744319e-01 8.237288e-03 7.324611e-01
180 8.428560e-01 2.874538e-03 3.544129e-01
181 4.104148e-01 1.002433e-04 8.404402e-02


```

## 182 2.221138e-02 1.772104e-02 1.289611e-02
## 183 3.541256e-03 1.419350e-02 1.147515e+00
## 184 5.331006e-03 3.510945e-02 1.230504e-01
## 185 5.128100e-01 1.485745e-02 1.804704e-01
## 186 1.699185e-01 9.944364e-02 2.396144e-02
## 187 4.804962e-01 8.945083e-02 4.553512e-02
## 188 1.099950e-02 1.535729e-02 2.366387e-02
## 189 7.538724e-03 8.744899e-03 4.098559e-01
## 190 7.838247e-03 6.504866e-03 4.498496e-01
## 191 7.567122e-01 3.059763e-02 4.612165e-02
## 192 4.283132e-01 7.568524e-02 2.069342e-02
## 193 8.533303e-01 2.068224e-01 1.432996e-01
## 194 2.984880e-02 7.102511e-03 1.536997e-01
## 195 9.833406e-03 3.336977e-02 1.871799e+00
## 196 1.913477e-02 2.801433e-02 3.055312e-04
## 197 2.690293e-02 5.185839e-02 4.813213e-01
## 198 5.255680e-02 1.522721e-01 5.209137e-02
## 199 3.494325e-02 2.651643e-01 1.543228e-01
## 200 2.871788e-02 5.600364e-02 1.242064e-06
## 201 6.335463e-02 1.430117e-01 1.372407e-04
## 202 8.067558e-02 2.615125e-01 8.381472e-02
## 203 3.477177e-02 4.651467e-02 2.059552e-01
## 204 6.335463e-02 1.430117e-01 1.372407e-04
## 205 5.374639e-02 2.409215e-01 7.616751e-01
## 206 3.224083e-02 5.836131e-02 5.667282e-02
## 207 6.853781e-02 1.467647e-01 6.183231e-02
## 208 5.852842e-02 2.457854e-01 1.231403e+00
## 209 2.165248e-02 1.410361e-01 2.804123e-03
## 210 5.257745e-02 1.788459e-01 4.643390e-01
## 211 3.303632e-02 5.512856e-01 4.860233e-03
## 212 4.704103e-01 1.106321e-02 1.064236e-01
## 213 5.740741e-01 5.242980e-04 2.244047e-03
## 214 2.498795e-01 8.290829e-03 9.346379e-02
## 215 4.266223e-02 1.119618e-02 2.287588e-02
## 216 3.116766e-02 2.397079e-02 7.395053e-01
## 217 7.715859e-03 7.376489e-03 1.176013e-02
## 218 5.185391e-01 6.652128e-03 4.272477e-03
## 219 6.345081e-01 4.228920e-02 4.508214e-01
## 220 2.007198e-01 1.303817e-01 6.511425e-01
## 221 5.056134e-02 1.213292e-05 1.549829e-01
## 222 2.921733e-02 3.146888e-05 1.975355e-03
## 223 1.970712e-02 4.128401e-02 1.559057e-01
## 224 7.882636e-04 1.486157e-02 6.231935e-02
## 225 2.709000e-02 5.739988e-02 2.400445e-02
## 226 1.152165e-01 1.138504e-01 1.411813e-01
## 227 6.224908e-03 5.172434e-02 9.821602e-02
## 228 7.251140e-02 1.150030e-01 5.105866e-01
## 229 5.316027e-04 2.421552e-01 5.235190e-02
## 230 7.751611e-02 5.244957e-02 1.492776e+00
## 231 1.211004e-01 9.551439e-02 1.470577e-02
## 232 2.288343e-02 1.280812e-01 8.675836e-01
## 233 2.649935e-01 2.596884e-03 1.409921e+00
## 234 3.852360e-01 5.937358e-03 4.801002e-01
## 235 6.380932e-01 1.408095e-03 8.471778e-02

```

```

## 236 1.450016e-01 2.522390e-02 9.848558e-01
## 237 2.058973e-01 3.847916e-02 1.718320e-01
## 238 3.737114e-01 9.992412e-02 1.093703e+00
## 239 2.445278e-01 2.183669e-02 5.541041e-03
## 240 2.954389e-01 1.910659e-02 3.447192e-02
## 241 5.208169e-01 3.159728e-02 6.372664e-01
## 242 3.047066e-01 1.258820e+00 7.391597e-01
## 243 2.186131e-01 1.682820e+00 7.477495e-02
## 244 1.547024e-01 2.434101e+00 4.012567e-02
## 245 6.776867e-02 7.606004e-03 2.822326e-03
## 246 3.034396e-02 4.707665e-03 1.171762e-01
## 247 9.791294e-03 4.605725e-03 4.251428e-01
## 248 2.613699e-01 6.032947e-03 5.487671e-01
## 249 1.873332e-01 2.124001e-03 6.501172e-01
## 250 2.270512e-01 3.303624e-03 5.733024e-01
## 251 9.072900e-02 6.265452e-02 2.140756e-03
## 252 2.904178e-02 1.431637e-01 2.100842e-01
## 253 6.656840e-01 1.727792e-01 1.525848e+00
## 254 8.506638e-01 2.365269e-01 1.842041e-02
## 255 7.541980e-01 5.496614e-02 5.252291e-01
## 256 4.935880e-04 1.526384e-02 1.005628e+00
## 257 1.145454e-01 9.952224e-03 2.174446e-02
## 258 1.112043e-01 8.679537e-04 3.136058e-03
## 259 7.517273e-01 5.295470e-01 2.721689e+00
## 260 8.073775e-01 1.145012e-01 1.642759e-02

```

```

index_pca$cos2          # degree of representation

```

```

##          Dim.1          Dim.2          Dim.3          Dim.4          Dim.5
## 1  5.463974e-02 3.788172e-01 2.855536e-02 4.728627e-01 5.899615e-02
## 2  1.048585e-01 6.779188e-01 2.478083e-03 1.099261e-01 7.347571e-02
## 3  7.058677e-03 8.114899e-01 1.824939e-03 4.169295e-02 1.253621e-01
## 4  2.762441e-01 3.470579e-01 3.272904e-02 3.216117e-01 3.773590e-03
## 5  1.012651e-01 7.711648e-01 1.602201e-03 9.586669e-02 3.763645e-03
## 6  3.934374e-01 1.140547e-01 1.489760e-01 3.080039e-01 3.436872e-02
## 7  3.607668e-01 3.814810e-01 5.175621e-02 1.918534e-01 6.319320e-04
## 8  4.593778e-01 3.174636e-01 6.275428e-02 1.436600e-01 1.855255e-03
## 9  1.347454e-01 6.113578e-01 8.799736e-03 1.812400e-01 1.340105e-03
## 10 2.666334e-01 4.465884e-01 2.076956e-02 1.862010e-01 2.280859e-02
## 11 6.010006e-02 5.342051e-01 1.110971e-02 8.883044e-02 2.753799e-01
## 12 1.465988e-01 3.869587e-01 2.164893e-02 9.662471e-02 3.164664e-01
## 13 3.986618e-01 3.501696e-01 4.740203e-02 1.884530e-01 1.118709e-02
## 14 4.909101e-01 2.816683e-01 5.837870e-02 1.390571e-01 2.649302e-02
## 15 1.866554e-01 5.611810e-01 9.622047e-03 1.487556e-01 7.373530e-02
## 16 3.027879e-01 3.937210e-01 1.929575e-02 1.458229e-01 1.228359e-01
## 17 1.052041e-01 5.841300e-01 1.841402e-02 1.976745e-01 2.635643e-02
## 18 2.255490e-01 4.165603e-01 3.270823e-02 1.990653e-01 6.466560e-02
## 19 6.054824e-01 1.191301e-01 9.805739e-02 1.597918e-01 1.058106e-03
## 20 3.900778e-01 2.319759e-01 9.682191e-02 2.322273e-01 1.728895e-02
## 21 1.533605e-01 3.547665e-01 5.428419e-02 2.528383e-01 2.149953e-02
## 22 7.863703e-02 3.653397e-01 8.233481e-02 1.251159e-01 2.339846e-01
## 23 5.290874e-01 1.977696e-01 8.803465e-02 1.746507e-01 1.060166e-04
## 24 4.212219e-01 3.056261e-01 5.338803e-02 1.596055e-01 1.257298e-02
## 25 7.657027e-01 1.207747e-01 8.641417e-06 9.240190e-02 1.361760e-02

```

```

## 26 6.840453e-01 1.229258e-01 3.441814e-02 1.196853e-01 8.505201e-03
## 27 7.175035e-01 2.220952e-02 1.538836e-01 9.080120e-02 6.165088e-03
## 28 5.054014e-01 1.307442e-01 5.624323e-02 3.043881e-01 6.913010e-04
## 29 5.488095e-01 1.200689e-01 6.033122e-02 2.688641e-01 3.570969e-05
## 30 5.109952e-01 2.339078e-01 2.472218e-02 1.846091e-01 3.922704e-02
## 31 5.541913e-01 1.781636e-01 3.035495e-02 1.730815e-01 5.670521e-02
## 32 7.295699e-01 2.872132e-02 1.012068e-01 1.358070e-01 3.113053e-04
## 33 7.499251e-01 2.558238e-02 1.022576e-01 1.178692e-01 7.266415e-05
## 34 7.328627e-01 7.891975e-03 8.123825e-02 1.455836e-01 1.378916e-02
## 35 7.361877e-01 5.473002e-03 8.120854e-02 1.388277e-01 2.128798e-02
## 36 1.740000e-01 2.082515e-02 1.448814e-01 9.529795e-02 6.805728e-02
## 37 3.966109e-01 1.182583e-01 1.714336e-01 1.245004e-01 1.412566e-01
## 38 9.498946e-04 8.631005e-01 7.766604e-03 1.101828e-01 6.182469e-03
## 39 6.532670e-01 2.376636e-01 1.970380e-02 9.081913e-05 8.682918e-02
## 40 7.795919e-03 1.741613e-01 2.731335e-01 6.899612e-02 4.216640e-01
## 41 6.614937e-01 1.386255e-01 7.690464e-02 1.083669e-02 7.043517e-03
## 42 8.130377e-01 1.976627e-03 1.540363e-02 5.029677e-03 1.601912e-02
## 43 5.746433e-01 2.595164e-02 3.888551e-01 1.368540e-03 3.004701e-03
## 44 4.503676e-01 8.569351e-03 5.310299e-01 8.657166e-05 5.809378e-03
## 45 6.037202e-01 1.182005e-02 3.536778e-01 6.552479e-03 1.706246e-02
## 46 5.866818e-01 9.383257e-03 3.882632e-01 3.605943e-03 1.146272e-02
## 47 4.460209e-01 2.401649e-03 5.457099e-01 4.860575e-04 1.186947e-03
## 48 5.458313e-01 3.023420e-04 4.433159e-01 5.508875e-04 6.968217e-03
## 49 4.536057e-01 4.851309e-01 5.172078e-04 1.574802e-02 3.689745e-03
## 50 4.957348e-03 3.150478e-01 5.874165e-01 2.156826e-03 7.404700e-03
## 51 3.748191e-01 8.810077e-02 5.145686e-01 1.918244e-04 6.561106e-03
## 52 7.253373e-01 8.582806e-03 2.558800e-01 7.824659e-03 1.092460e-03
## 53 2.112903e-01 6.754732e-02 6.915453e-01 7.903156e-04 1.222122e-02
## 54 4.224657e-01 9.623052e-02 4.538198e-01 1.090537e-03 1.599534e-02
## 55 2.947342e-01 5.856067e-02 6.421211e-01 2.003939e-03 1.952508e-05
## 56 3.588162e-01 8.726182e-02 5.377584e-01 1.678166e-05 1.922836e-04
## 57 4.490104e-01 3.972647e-01 5.273770e-02 8.023584e-02 7.544522e-03
## 58 4.289326e-01 2.467304e-01 6.647724e-02 2.327141e-01 1.145203e-03
## 59 5.508653e-02 4.421829e-01 9.690740e-03 9.116971e-02 3.656842e-01
## 60 6.816746e-01 1.511039e-01 3.998737e-02 1.103204e-01 9.111552e-03
## 61 4.378698e-01 2.813176e-01 1.512378e-02 6.665309e-02 1.902492e-01
## 62 6.186763e-01 1.811920e-01 4.541668e-02 1.438481e-01 1.077480e-02
## 63 3.228340e-01 3.353294e-01 1.426253e-02 8.266812e-02 2.443580e-01
## 64 8.684999e-01 4.948571e-02 1.837561e-03 7.657406e-02 1.504554e-04
## 65 5.901933e-01 2.021961e-01 3.044119e-02 7.423324e-02 1.001379e-01
## 66 1.808290e-01 5.813913e-01 3.179766e-02 1.945623e-01 1.486675e-03
## 67 3.942645e-04 7.560361e-01 2.247614e-02 1.302959e-01 3.940585e-02
## 68 3.691534e-01 4.753861e-01 3.416769e-02 1.025399e-01 2.041764e-03
## 69 2.254369e-01 5.519674e-01 2.624742e-02 1.409338e-01 1.836755e-03
## 70 6.183541e-03 6.980942e-01 2.271633e-02 1.358605e-01 2.852393e-02
## 71 7.804418e-01 1.168813e-01 1.790715e-02 7.803858e-02 4.680867e-04
## 72 3.944501e-01 3.657298e-01 1.401136e-02 7.748133e-02 1.479383e-01
## 73 7.708417e-01 9.940152e-02 2.883961e-02 8.781103e-02 6.525491e-03
## 74 4.800600e-01 2.494290e-01 1.131492e-01 4.788586e-02 9.581140e-02
## 75 8.186731e-01 3.773438e-02 6.591258e-03 1.046850e-01 1.290688e-02
## 76 5.023239e-01 2.483221e-01 4.685817e-02 1.159495e-01 7.476250e-02
## 77 5.175803e-01 1.571136e-01 9.294385e-02 1.972487e-01 2.085856e-04
## 78 1.505148e-01 3.713040e-01 3.156780e-02 1.230267e-01 2.753064e-01
## 79 4.411623e-01 4.944091e-01 2.842422e-02 3.057196e-07 1.995736e-02

```

```

## 80 1.106947e-01 7.911063e-01 1.113878e-02 6.290067e-03 3.968379e-02
## 81 2.372756e-01 6.049085e-01 4.025261e-03 5.257533e-02 3.399572e-02
## 82 7.550523e-01 1.300554e-01 2.573501e-02 4.894487e-02 7.560392e-03
## 83 9.259407e-01 2.266763e-02 5.430400e-04 3.382214e-02 4.224473e-03
## 84 7.289032e-04 7.147007e-01 1.992780e-02 9.300571e-02 7.979200e-02
## 85 5.910402e-01 3.684843e-01 3.109550e-02 1.442625e-03 3.358786e-05
## 86 9.195447e-02 7.656519e-01 1.427096e-05 4.097543e-02 3.052602e-02
## 87 7.288107e-03 6.325622e-01 1.618545e-02 1.764493e-03 2.994057e-01
## 88 7.971245e-01 1.720337e-01 1.777631e-02 5.664129e-04 2.472963e-03
## 89 2.848187e-01 4.644286e-01 3.594955e-02 1.787290e-01 3.294454e-03
## 90 2.091952e-06 5.471428e-01 7.150870e-05 2.807497e-02 4.052855e-01
## 91 1.877478e-02 7.674309e-01 1.458747e-02 1.500744e-01 2.021745e-02
## 92 1.608328e-01 7.035689e-01 5.221758e-05 4.108497e-02 6.769661e-02
## 93 3.200921e-02 8.426942e-01 2.798147e-03 8.217573e-02 1.982907e-02
## 94 1.663099e-01 7.435514e-01 2.848563e-03 1.693097e-02 5.039972e-02
## 95 3.463962e-03 8.521627e-01 3.525013e-03 8.093254e-02 5.942481e-02
## 96 6.376482e-02 9.004426e-01 2.209525e-03 2.837559e-02 4.817396e-03
## 97 6.398788e-01 1.361256e-01 4.917690e-03 4.448520e-04 1.600682e-01
## 98 3.317088e-01 9.622738e-02 2.676777e-03 2.356922e-02 3.563566e-01
## 99 2.400900e-05 5.653703e-03 5.780058e-02 8.610709e-02 5.202358e-01
## 100 7.799778e-01 1.478563e-01 2.356171e-02 3.718585e-03 3.587995e-02
## 101 8.162036e-01 1.360042e-01 3.553872e-02 9.005014e-03 2.956843e-03
## 102 8.272585e-01 1.229072e-01 3.351721e-02 1.130634e-02 4.974818e-03
## 103 9.883114e-01 7.120742e-03 7.673726e-04 1.804094e-03 1.672628e-04
## 104 7.043865e-01 5.877028e-02 2.355713e-05 1.276118e-03 2.214722e-01
## 105 8.556637e-01 7.316547e-02 6.975157e-03 8.137953e-03 5.048324e-02
## 106 8.687144e-01 8.368578e-02 7.058457e-03 6.754435e-03 3.347180e-02
## 107 8.329061e-01 1.197859e-01 2.898765e-02 1.219270e-02 5.585083e-03
## 108 4.441302e-01 3.640689e-01 1.745618e-01 8.665695e-04 7.922366e-05
## 109 3.903356e-01 3.769257e-01 2.070418e-01 1.529456e-04 3.263872e-03
## 110 6.854167e-01 2.202499e-01 8.521971e-02 5.224218e-03 9.372241e-05
## 111 9.269679e-01 5.041319e-02 4.910241e-03 6.914618e-03 1.425344e-03
## 112 6.531014e-01 2.793990e-01 4.470920e-02 2.618942e-03 1.697407e-04
## 113 2.735622e-01 5.920659e-01 1.074568e-01 1.088218e-04 2.110810e-04
## 114 9.832559e-01 3.056552e-05 8.073670e-04 9.463699e-03 2.679176e-03
## 115 7.956407e-01 1.488070e-01 3.932191e-02 1.130210e-02 4.809978e-03
## 116 7.940977e-01 1.506854e-01 3.924974e-02 1.106731e-02 4.814405e-03
## 117 7.916932e-01 1.535192e-01 3.913704e-02 1.071734e-02 4.820561e-03
## 118 7.948752e-01 1.497451e-01 3.928612e-02 1.118456e-02 4.812223e-03
## 119 9.517221e-01 2.429010e-02 2.660193e-03 5.857569e-03 2.588869e-03
## 120 7.059782e-01 2.208494e-01 3.934269e-02 2.028719e-03 4.827777e-04
## 121 3.238043e-01 5.281531e-01 1.049559e-01 3.922854e-06 1.287328e-05
## 122 9.806287e-01 8.965932e-04 1.378185e-03 8.559387e-03 3.319610e-03
## 123 7.749706e-01 1.747073e-01 4.232571e-02 6.764532e-03 9.149985e-04
## 124 7.621680e-01 1.885191e-01 4.381456e-02 4.843369e-03 9.667885e-05
## 125 7.455241e-01 2.051124e-01 4.517861e-02 3.056422e-03 1.254606e-04
## 126 7.844240e-01 1.634375e-01 4.074643e-02 8.712270e-03 2.509917e-03
## 127 9.445916e-01 3.251539e-02 3.166930e-03 6.431346e-03 1.913042e-03
## 128 6.668840e-01 2.596121e-01 4.416440e-02 2.103200e-03 2.505059e-04
## 129 2.874667e-01 5.680588e-01 1.083577e-01 1.621682e-05 1.123308e-04
## 130 9.815431e-01 3.439799e-04 1.194168e-03 8.839776e-03 2.959434e-03
## 131 8.008901e-01 1.552854e-01 2.716924e-02 8.971660e-04 7.498768e-03
## 132 9.050280e-01 4.583457e-02 8.267383e-03 6.627936e-04 3.896529e-02
## 133 9.571213e-01 1.948020e-02 7.504690e-03 9.627327e-03 4.398287e-03

```

```

## 134 9.869507e-01 6.423476e-03 1.945794e-04 3.341172e-03 1.966070e-04
## 135 8.972252e-01 8.382360e-02 1.229871e-02 5.890267e-04 8.326597e-04
## 136 4.430029e-01 4.503986e-01 8.655507e-02 1.393119e-03 5.986745e-03
## 137 7.971358e-01 1.469375e-01 3.939172e-02 1.153800e-02 4.805295e-03
## 138 7.956407e-01 1.488070e-01 3.932191e-02 1.130210e-02 4.809978e-03
## 139 7.956407e-01 1.488070e-01 3.932191e-02 1.130210e-02 4.809978e-03
## 140 7.948752e-01 1.497451e-01 3.928612e-02 1.118456e-02 4.812223e-03
## 141 7.963942e-01 1.478711e-01 3.935711e-02 1.141991e-02 4.807668e-03
## 142 9.594874e-01 2.765647e-02 2.219960e-03 4.919707e-03 5.156485e-04
## 143 8.432784e-01 1.259484e-01 1.763171e-02 2.980871e-03 5.185509e-05
## 144 6.582879e-01 2.798353e-01 4.599104e-02 1.183830e-03 2.020568e-05
## 145 9.831459e-01 1.196395e-04 1.118049e-03 9.082520e-03 3.407615e-03
## 146 7.971358e-01 1.469375e-01 3.939172e-02 1.153800e-02 4.805295e-03
## 147 7.971358e-01 1.469375e-01 3.939172e-02 1.153800e-02 4.805295e-03
## 148 7.971358e-01 1.469375e-01 3.939172e-02 1.153800e-02 4.805295e-03
## 149 6.953535e-01 2.208461e-01 2.034053e-02 4.563962e-03 6.511662e-04
## 150 6.461727e-01 2.363367e-01 1.337812e-02 2.194142e-03 4.219465e-04
## 151 3.803836e-01 2.769804e-01 1.170113e-03 3.080839e-04 7.924969e-03
## 152 8.338221e-01 4.580865e-02 4.476182e-02 3.127822e-04 1.081173e-03
## 153 3.763477e-01 3.330136e-01 1.748760e-01 2.822124e-03 1.536922e-02
## 154 1.142974e-03 5.520425e-01 2.712796e-01 1.631116e-02 2.850991e-02
## 155 8.338221e-01 4.580865e-02 4.476182e-02 3.127822e-04 1.081173e-03
## 156 4.087954e-01 3.112376e-01 1.700836e-01 2.520538e-03 1.597781e-02
## 157 1.228384e-03 5.470028e-01 2.762572e-01 1.722932e-02 2.772726e-02
## 158 8.733234e-01 1.858201e-02 3.013974e-02 6.490688e-04 8.156674e-04
## 159 4.690258e-01 2.515821e-01 1.557654e-01 2.346308e-03 1.418046e-02
## 160 4.118011e-03 5.153069e-01 2.822522e-01 1.852109e-02 3.054888e-02
## 161 7.384244e-01 2.010357e-01 7.293804e-03 1.262404e-03 3.223806e-03
## 162 6.557526e-01 2.285765e-01 6.937806e-04 1.137660e-03 1.186973e-03
## 163 3.196803e-01 2.352713e-01 2.726338e-02 1.966802e-02 4.115069e-03
## 164 8.058419e-01 1.272549e-01 2.568215e-02 3.096270e-04 3.485472e-02
## 165 7.873475e-01 1.107515e-01 1.956735e-02 4.358599e-03 6.857338e-02
## 166 6.711838e-01 8.823364e-02 9.405811e-03 2.095675e-02 1.886013e-01
## 167 8.470241e-01 4.304417e-02 1.011329e-02 7.900067e-03 9.178319e-02
## 168 5.716552e-01 1.968734e-01 4.843435e-02 2.679537e-02 1.562333e-01
## 169 1.845938e-01 3.998023e-01 1.083639e-01 5.290000e-02 2.539603e-01
## 170 8.610473e-01 3.333356e-02 8.067821e-03 7.703649e-03 8.958143e-02
## 171 5.716552e-01 1.968734e-01 4.843435e-02 2.679537e-02 1.562333e-01
## 172 1.845938e-01 3.998023e-01 1.083639e-01 5.290000e-02 2.539603e-01
## 173 8.756581e-01 2.271108e-02 5.662519e-03 6.992034e-03 8.873362e-02
## 174 6.232731e-01 1.537296e-01 3.897168e-02 2.594195e-02 1.580760e-01
## 175 2.315455e-01 3.440649e-01 9.627893e-02 5.493683e-02 2.723902e-01
## 176 8.340027e-01 1.026489e-01 1.317522e-02 3.114141e-03 3.584398e-02
## 177 8.062200e-01 7.475767e-02 5.543375e-03 1.472806e-02 7.664451e-02
## 178 6.287439e-01 4.029555e-02 5.884022e-05 5.668093e-02 2.300725e-01
## 179 4.738319e-01 2.350013e-01 1.953142e-01 5.869743e-05 5.871806e-06
## 180 2.168922e-02 5.348698e-01 3.143402e-01 9.280378e-03 5.230317e-03
## 181 1.532305e-01 8.128644e-01 3.297366e-03 7.013129e-04 4.813297e-03
## 182 6.627710e-01 1.622869e-01 6.702716e-02 1.473544e-02 9.004951e-02
## 183 2.614575e-01 4.180208e-01 1.454919e-01 3.981926e-02 1.339878e-01
## 184 2.312495e-02 5.477786e-01 1.870929e-01 5.717483e-02 1.837825e-01
## 185 6.132706e-01 1.247364e-01 1.503956e-01 5.346711e-04 8.242186e-05
## 186 1.475115e-04 8.182794e-01 1.457577e-01 5.743578e-03 6.324801e-05
## 187 1.522292e-01 7.857615e-01 1.547695e-02 3.883835e-04 6.230600e-03

```

```

## 188 7.855059e-01 9.355356e-02 4.540253e-02 7.745209e-03 6.599421e-02
## 189 3.444706e-01 3.363227e-01 1.255745e-01 3.999943e-02 1.523891e-01
## 190 5.008767e-02 4.778695e-01 1.747914e-01 6.335528e-02 2.330778e-01
## 191 2.667735e-01 3.026972e-01 2.650439e-01 1.846236e-06 1.087373e-05
## 192 6.421305e-02 8.375826e-01 4.639383e-02 3.742443e-03 1.353351e-03
## 193 2.416883e-01 7.113023e-01 3.657706e-05 7.833042e-05 1.850964e-03
## 194 5.609629e-01 2.023732e-01 8.116221e-02 2.426191e-02 1.276227e-01
## 195 1.845853e-01 4.509231e-01 1.520744e-01 4.780616e-02 1.621665e-01
## 196 6.648591e-03 5.237421e-01 1.736941e-01 6.542524e-02 2.291065e-01
## 197 9.360981e-01 1.908450e-02 2.497777e-03 2.155859e-02 1.864098e-02
## 198 9.125380e-01 2.020693e-04 2.658502e-03 3.836474e-02 3.971873e-02
## 199 6.405358e-01 1.771885e-01 8.047578e-02 4.582444e-02 4.516250e-02
## 200 9.297799e-01 2.492634e-02 3.619708e-03 2.183397e-02 1.774173e-02
## 201 9.138321e-01 1.179519e-03 7.743869e-04 3.866209e-02 3.891150e-02
## 202 7.198914e-01 1.089398e-01 5.657564e-02 5.166820e-02 4.839220e-02
## 203 9.224405e-01 3.083306e-02 4.609010e-03 2.169683e-02 1.821477e-02
## 204 9.138321e-01 1.179519e-03 7.743869e-04 3.866209e-02 3.891150e-02
## 205 7.390965e-01 9.488551e-02 5.358620e-02 5.202094e-02 4.839756e-02
## 206 9.145319e-01 3.825218e-02 5.959068e-03 2.171805e-02 1.736104e-02
## 207 9.099765e-01 6.761271e-03 3.064977e-05 3.846304e-02 3.805669e-02
## 208 7.802284e-01 6.145203e-02 4.187252e-02 5.417846e-02 4.957307e-02
## 209 7.601660e-01 1.722669e-01 2.717282e-02 1.743574e-02 2.088564e-02
## 210 7.209182e-01 1.860865e-01 2.011806e-02 2.744037e-02 4.140614e-02
## 211 6.678799e-01 2.130482e-01 1.154545e-02 3.588345e-02 6.155773e-02
## 212 8.002862e-01 2.324589e-02 6.689602e-02 1.274743e-02 1.537916e-02
## 213 3.658539e-01 2.677404e-01 2.308157e-01 5.548234e-03 1.810038e-02
## 214 9.527161e-02 8.798117e-01 6.178150e-03 5.356050e-04 9.812317e-04
## 215 9.297163e-01 2.897180e-02 2.583012e-02 1.263718e-04 1.028410e-02
## 216 6.461500e-01 2.006610e-01 9.535729e-02 6.497409e-03 4.602105e-02
## 217 4.134280e-02 6.094407e-01 2.217563e-01 3.112536e-02 9.563120e-02
## 218 8.363319e-01 4.228696e-03 4.550302e-02 1.413695e-02 1.385490e-02
## 219 4.735388e-01 1.614852e-01 1.954053e-01 7.714885e-03 2.073764e-02
## 220 7.588231e-02 8.803685e-01 1.926389e-02 2.901206e-03 3.581870e-05
## 221 9.631579e-01 6.901876e-03 1.473671e-02 2.691147e-04 9.536567e-03
## 222 7.436435e-01 1.256965e-01 7.223905e-02 5.340935e-03 4.935779e-02
## 223 7.931546e-02 5.452870e-01 2.167933e-01 3.501385e-02 1.205964e-01
## 224 4.617953e-02 5.882933e-01 2.582505e-01 6.735091e-02 3.970313e-02
## 225 1.536743e-01 6.876284e-01 9.237167e-02 3.622921e-02 2.896228e-02
## 226 2.473273e-01 6.974157e-01 1.587456e-02 1.938248e-02 1.773547e-02
## 227 5.005500e-02 5.720293e-01 2.625662e-01 6.753738e-02 4.693514e-02
## 228 1.643178e-01 6.653291e-01 9.197458e-02 4.319419e-02 3.244530e-02
## 229 2.436292e-01 5.920585e-01 1.196891e-01 2.775834e-02 1.595915e-02
## 230 1.268635e-01 6.618157e-01 1.240981e-01 3.302761e-02 5.156065e-02
## 231 2.078899e-01 6.953988e-01 3.378527e-02 2.341742e-02 3.685873e-02
## 232 2.882316e-01 6.178306e-01 6.065827e-02 1.452836e-02 1.816986e-02
## 233 7.823718e-01 1.670141e-01 3.463322e-02 1.717481e-03 1.653889e-05
## 234 5.160511e-01 3.809218e-01 8.316401e-02 4.620907e-06 9.709779e-04
## 235 1.888385e-01 6.404644e-01 1.427234e-01 2.442903e-03 4.373322e-03
## 236 8.211335e-01 1.403240e-01 2.757696e-02 1.110211e-03 1.214184e-03
## 237 5.653404e-01 3.455987e-01 7.251388e-02 8.305180e-05 5.012511e-03
## 238 2.168032e-01 6.197628e-01 1.347071e-01 3.232393e-03 1.041543e-02
## 239 7.715584e-01 1.786522e-01 3.489098e-02 2.052014e-03 6.255294e-05
## 240 5.116906e-01 3.910218e-01 8.148372e-02 5.084202e-06 1.490080e-03
## 241 1.887749e-01 6.468054e-01 1.398956e-01 2.046729e-03 5.162808e-03

```

```

## 242 1.175278e-01 7.307843e-01 1.139385e-01 1.471990e-02 3.123491e-03
## 243 2.318084e-01 7.355809e-01 1.532012e-02 4.396955e-03 7.147728e-04
## 244 3.112760e-01 6.795193e-01 2.822743e-04 3.393932e-04 2.283099e-06
## 245 1.255194e-01 8.023081e-01 6.122727e-02 9.393500e-03 1.221497e-04
## 246 2.210176e-01 7.723919e-01 3.795089e-03 2.359056e-03 6.911103e-05
## 247 2.770553e-01 7.191842e-01 3.079047e-03 2.606045e-04 3.336498e-04
## 248 1.480702e-01 7.790531e-01 6.004886e-02 6.977789e-03 3.440874e-04
## 249 2.462946e-01 7.461011e-01 3.937834e-03 1.444682e-03 1.913753e-06
## 250 2.978854e-01 6.965408e-01 2.949255e-03 7.087515e-05 1.008767e-03
## 251 2.101487e-01 7.747716e-01 9.159439e-03 4.437020e-03 3.625328e-06
## 252 2.821871e-01 7.150820e-01 1.161444e-03 4.821599e-04 4.792094e-04
## 253 1.698260e-01 7.869459e-01 2.031035e-02 6.562761e-04 7.621122e-03
## 254 3.276866e-01 6.610263e-01 3.381521e-03 9.767272e-04 1.468794e-03
## 255 3.232593e-02 6.246894e-01 2.609515e-01 6.576892e-04 1.608766e-02
## 256 1.157372e-01 8.778965e-01 1.483998e-04 2.172069e-04 5.469589e-03
## 257 2.892552e-01 6.891562e-01 1.531213e-02 3.771646e-04 4.216571e-03
## 258 4.382284e-01 3.077123e-01 2.198930e-01 1.432024e-04 1.478278e-02
## 259 3.869407e-01 5.959309e-01 1.875575e-03 4.234784e-03 2.123206e-03
## 260 6.002798e-02 4.851508e-01 2.876773e-01 1.228220e-02 3.493079e-02
##      Dim.6      Dim.7      Dim.8
## 1  2.789268e-03 3.266097e-03 7.351847e-05
## 2  2.833431e-02 2.203420e-03 8.051448e-04
## 3  1.136426e-02 8.975744e-04 3.096139e-04
## 4  1.813354e-02 4.340487e-04 1.606365e-05
## 5  2.590140e-02 3.386607e-05 4.023611e-04
## 6  7.228236e-04 4.262309e-04 1.025210e-05
## 7  8.103404e-03 5.403961e-03 3.372302e-06
## 8  8.486507e-03 6.367022e-03 3.548614e-05
## 9  4.056438e-02 2.173375e-02 2.188429e-04
## 10 3.494592e-02 2.205288e-02 3.216944e-07
## 11 8.765350e-03 2.132596e-02 2.834588e-04
## 12 9.366364e-03 2.230663e-02 2.946552e-05
## 13 1.313875e-03 2.812621e-03 5.270811e-09
## 14 4.977058e-04 2.995064e-03 2.270064e-09
## 15 3.940786e-04 1.928948e-02 3.670273e-04
## 16 5.232575e-04 1.500371e-02 9.611755e-06
## 17 6.241886e-02 5.801677e-03 4.265600e-07
## 18 5.418366e-02 7.225932e-03 4.198272e-05
## 19 1.134485e-02 5.129462e-03 5.908560e-06
## 20 2.518443e-02 6.349125e-03 7.454316e-05
## 21 1.283336e-01 3.491724e-02 2.007060e-07
## 22 6.510727e-02 4.932258e-02 1.581409e-04
## 23 1.305276e-03 9.033839e-03 1.247558e-05
## 24 1.037461e-02 3.720553e-02 5.328670e-06
## 25 7.255214e-03 2.169432e-04 2.230671e-05
## 26 3.015345e-02 2.182407e-04 4.857458e-05
## 27 9.327914e-03 1.091196e-04 1.090466e-07
## 28 2.455887e-03 7.233680e-05 3.536887e-06
## 29 1.764671e-03 1.258973e-04 3.275558e-09
## 30 2.331548e-04 6.280938e-03 2.466528e-05
## 31 4.946007e-04 7.007445e-03 1.409460e-06
## 32 2.151719e-03 2.231929e-03 1.734083e-08
## 33 2.337888e-03 1.953272e-03 1.898753e-06
## 34 1.700041e-02 1.624526e-03 9.432497e-06

```

```

## 35 1.612296e-02 8.919023e-04 2.186082e-07
## 36 3.400984e-01 1.567057e-01 1.341512e-04
## 37 2.753177e-02 2.040838e-02 1.119326e-08
## 38 8.955592e-03 2.690815e-03 1.713453e-04
## 39 2.361310e-03 1.493855e-06 8.282684e-05
## 40 1.746998e-03 5.249267e-02 9.532621e-06
## 41 4.514072e-02 5.992954e-02 2.572179e-05
## 42 2.570205e-02 1.226151e-01 2.160403e-04
## 43 2.540319e-03 3.628121e-03 8.297756e-06
## 44 4.121921e-03 1.278616e-05 2.564593e-06
## 45 6.242741e-03 9.241328e-04 2.040088e-07
## 46 4.106700e-05 5.594315e-04 2.619253e-06
## 47 1.449680e-03 2.744621e-03 2.270457e-07
## 48 2.925717e-03 1.054507e-04 2.087555e-07
## 49 1.232297e-02 2.859999e-02 3.854916e-04
## 50 7.848390e-02 4.531290e-03 1.631596e-06
## 51 1.461812e-02 1.081093e-03 5.935639e-05
## 52 2.601995e-04 1.022511e-03 3.042331e-08
## 53 1.596768e-02 6.175301e-04 2.025222e-05
## 54 8.571164e-03 1.788056e-03 3.888265e-05
## 55 4.191921e-05 2.400495e-03 1.181140e-04
## 56 1.428393e-02 1.638783e-03 3.175682e-05
## 57 1.316674e-02 1.101881e-06 3.889719e-05
## 58 4.902049e-04 2.343674e-02 7.347337e-05
## 59 1.336995e-03 3.436792e-02 4.810426e-04
## 60 7.294594e-03 5.007615e-04 6.849583e-06
## 61 7.647885e-03 1.104384e-03 3.419674e-05
## 62 2.239902e-05 5.808490e-05 1.168497e-05
## 63 7.895772e-05 4.689976e-04 6.869716e-08
## 64 1.017943e-03 2.412213e-03 2.219107e-05
## 65 2.866259e-04 2.500315e-03 1.134371e-05
## 66 4.890099e-04 9.381540e-03 6.252891e-05
## 67 4.028168e-02 1.110800e-02 2.012689e-06
## 68 1.054188e-02 6.068258e-03 1.009802e-04
## 69 3.862261e-02 1.495380e-02 1.308611e-06
## 70 1.073052e-01 1.302733e-03 1.354302e-05
## 71 5.850730e-03 3.128981e-04 9.947192e-05
## 72 1.784662e-04 2.076335e-04 3.060012e-06
## 73 6.416283e-03 1.630700e-04 1.283961e-06
## 74 1.305468e-02 6.092351e-04 5.387929e-07
## 75 1.913497e-02 2.143097e-04 6.008263e-05
## 76 1.031761e-02 1.446675e-03 1.955825e-05
## 77 3.458498e-02 3.090571e-04 1.086281e-05
## 78 4.673926e-02 1.463650e-03 7.738631e-05
## 79 1.602883e-02 1.577036e-05 2.110184e-06
## 80 4.097702e-02 2.842034e-06 1.065030e-04
## 81 6.704316e-02 2.927747e-05 1.471922e-04
## 82 3.263671e-02 1.144594e-05 3.893529e-06
## 83 1.280031e-02 2.211387e-07 1.492431e-06
## 84 1.899002e-02 7.280284e-02 5.203905e-05
## 85 7.398672e-03 4.849847e-04 2.014035e-05
## 86 6.558404e-02 5.214527e-03 7.938617e-05
## 87 4.004258e-02 2.739848e-03 1.162794e-05
## 88 3.223601e-04 9.659517e-03 4.426456e-05

```



```

## 89 3.021887e-02 2.289452e-03 2.713940e-04
## 90 1.498476e-02 4.435418e-03 2.952383e-06
## 91 2.864738e-02 2.246736e-04 4.298347e-05
## 92 2.590875e-02 6.765400e-04 1.791748e-04
## 93 1.146699e-02 8.937231e-03 8.943941e-05
## 94 1.146030e-02 8.273507e-03 2.256997e-04
## 95 1.755464e-04 2.980598e-05 2.856176e-04
## 96 3.709854e-04 1.875337e-05 3.387890e-07
## 97 7.568693e-06 5.855151e-02 5.789037e-06
## 98 1.371124e-04 1.893213e-01 2.814535e-06
## 99 4.787680e-05 3.300889e-01 4.204967e-05
## 100 4.651395e-06 8.999203e-03 1.782853e-06
## 101 1.018221e-04 1.873920e-04 2.425338e-06
## 102 2.108757e-05 1.446393e-05 4.360481e-07
## 103 4.377617e-04 1.376205e-03 1.519076e-05
## 104 3.560575e-03 1.048472e-02 2.603371e-05
## 105 5.560573e-03 3.093474e-09 1.388358e-05
## 106 3.976643e-07 3.079929e-04 6.699386e-06
## 107 5.392535e-04 1.102357e-06 2.225601e-06
## 108 1.216346e-02 3.629365e-03 5.004684e-04
## 109 1.029475e-03 2.123230e-02 1.835788e-05
## 110 2.999237e-03 3.529311e-04 4.435791e-04
## 111 6.610304e-03 2.384575e-03 3.737979e-04
## 112 1.479021e-02 4.648576e-03 5.629137e-04
## 113 2.033954e-02 5.715322e-03 5.404187e-04
## 114 2.483550e-03 1.106419e-03 1.733026e-04
## 115 1.058480e-04 9.498739e-06 3.006659e-06
## 116 4.656360e-05 3.564322e-05 3.211234e-06
## 117 2.585327e-06 1.064570e-04 3.531542e-06
## 118 7.322728e-05 2.047616e-05 3.108052e-06
## 119 1.101956e-02 1.804430e-03 5.717860e-05
## 120 2.512071e-02 5.421068e-03 7.764182e-04
## 121 3.488913e-02 7.880731e-03 3.000124e-04
## 122 4.075909e-03 1.084944e-03 5.664044e-05
## 123 9.624751e-05 1.741834e-04 4.643476e-05
## 124 9.116539e-05 3.404021e-04 1.267560e-04
## 125 3.148767e-05 7.229528e-04 2.485610e-04
## 126 4.279082e-05 1.211994e-04 5.896474e-06
## 127 8.127812e-03 3.203041e-03 5.086180e-05
## 128 1.971062e-02 6.955063e-03 3.201383e-04
## 129 2.716187e-02 8.637595e-03 1.887666e-04
## 130 3.413814e-03 1.652030e-03 5.371232e-05
## 131 8.060683e-03 1.980818e-04 5.757876e-07
## 132 1.112838e-03 7.681813e-05 5.228349e-05
## 133 1.776989e-03 8.568325e-05 5.554768e-06
## 134 2.310304e-03 4.117829e-04 1.713586e-04
## 135 4.450242e-03 7.246904e-04 5.585556e-05
## 136 1.176533e-02 7.806652e-04 1.175325e-04
## 137 1.888494e-04 4.089496e-08 2.809225e-06
## 138 1.058480e-04 9.498739e-06 3.006659e-06
## 139 1.058480e-04 9.498739e-06 3.006659e-06
## 140 7.322728e-05 2.047616e-05 3.108052e-06
## 141 1.443980e-04 2.693042e-06 2.907051e-06
## 142 3.736631e-03 1.400315e-03 6.387682e-05

```

```

## 143 7.554768e-03 2.553360e-03 6.551532e-07
## 144 1.131899e-02 3.326725e-03 3.595687e-05
## 145 2.207319e-03 8.717104e-04 4.725436e-05
## 146 1.888494e-04 4.089496e-08 2.809225e-06
## 147 1.888494e-04 4.089496e-08 2.809225e-06
## 148 1.888494e-04 4.089496e-08 2.809225e-06
## 149 5.791774e-02 2.281731e-04 9.882446e-05
## 150 1.009030e-01 4.596258e-04 1.337959e-04
## 151 3.316553e-01 1.575653e-03 1.924949e-06
## 152 7.189624e-02 2.170682e-03 1.465395e-04
## 153 9.363532e-02 3.200011e-03 7.360558e-04
## 154 1.284469e-01 2.264269e-03 2.756597e-06
## 155 7.189624e-02 2.170682e-03 1.465395e-04
## 156 8.942376e-02 1.951578e-03 9.811262e-06
## 157 1.295177e-01 1.033018e-03 4.319697e-06
## 158 7.430631e-02 1.867953e-03 3.158216e-04
## 159 1.053860e-01 1.251281e-03 4.626893e-04
## 160 1.476819e-01 1.514947e-03 5.605448e-05
## 161 3.552985e-02 1.320454e-02 2.551212e-05
## 162 7.944224e-02 3.291471e-02 2.955051e-04
## 163 3.065356e-01 8.725882e-02 2.075308e-04
## 164 5.312178e-03 7.392808e-04 5.248218e-06
## 165 7.487871e-03 1.764330e-03 1.494734e-04
## 166 1.782383e-02 3.764507e-03 3.040473e-05
## 167 1.181769e-04 9.645999e-06 7.319818e-06
## 168 3.033946e-06 2.088770e-06 3.173814e-06
## 169 1.679327e-04 2.078664e-05 1.909663e-04
## 170 2.382711e-04 7.823357e-08 2.791673e-05
## 171 3.033946e-06 2.088770e-06 3.173814e-06
## 172 1.679327e-04 2.078664e-05 1.909663e-04
## 173 1.813014e-04 1.498132e-05 4.637467e-05
## 174 1.048305e-06 4.130873e-07 6.191738e-06
## 175 5.673370e-04 9.890548e-05 1.173675e-04
## 176 1.662994e-05 1.113578e-02 6.260246e-05
## 177 4.920507e-05 2.203633e-02 2.087628e-05
## 178 2.905441e-05 4.411888e-02 3.508607e-07
## 179 9.456291e-02 5.970971e-04 6.280345e-04
## 180 1.142418e-01 1.416946e-04 2.066489e-04
## 181 2.506884e-02 2.226795e-06 2.208360e-05
## 182 2.421387e-03 7.025734e-04 6.047826e-06
## 183 3.174650e-04 4.627450e-04 4.425362e-04
## 184 2.993945e-04 7.170881e-04 2.972827e-05
## 185 1.096588e-01 1.155434e-03 1.660141e-04
## 186 2.473005e-02 5.263504e-03 1.500200e-05
## 187 3.736821e-02 2.529942e-03 1.523389e-05
## 188 1.185591e-03 6.019914e-04 1.097235e-05
## 189 7.510877e-04 3.168556e-04 1.756613e-04
## 190 5.284636e-04 1.594954e-04 1.304714e-04
## 191 1.630325e-01 2.397425e-03 4.274647e-05
## 192 4.388536e-02 2.820221e-03 9.120998e-06
## 193 4.136734e-02 3.646295e-03 2.988392e-05
## 194 3.262532e-03 2.823278e-04 7.226913e-05
## 195 8.007142e-04 9.881903e-04 6.556690e-04
## 196 9.027194e-04 4.806440e-04 6.200649e-08

```

```

## 197 1.192371e-03 8.358811e-04 9.176959e-05
## 198 3.167233e-03 3.337224e-03 1.350420e-05
## 199 2.861534e-03 7.897043e-03 5.436478e-05
## 200 1.227660e-03 8.706744e-04 2.284135e-10
## 201 3.646658e-03 2.993657e-03 3.398222e-08
## 202 6.656248e-03 7.846817e-03 2.974813e-05
## 203 1.458895e-03 7.097426e-04 3.717252e-05
## 204 3.646658e-03 2.993657e-03 3.398222e-08
## 205 4.463972e-03 7.277154e-03 2.721410e-04
## 206 1.307309e-03 8.606191e-04 9.885506e-06
## 207 3.765116e-03 2.932133e-03 1.461220e-05
## 208 4.849826e-03 7.406777e-03 4.389465e-04
## 209 6.152099e-04 1.457335e-03 3.427399e-07
## 210 1.771706e-03 2.191720e-03 6.730996e-05
## 211 1.426603e-03 8.657692e-03 9.028607e-07
## 212 8.067673e-02 6.900277e-04 7.851656e-05
## 213 1.119024e-01 3.716750e-05 1.881721e-06
## 214 1.698934e-02 2.050018e-04 2.733639e-05
## 215 4.619688e-03 4.409129e-04 1.065612e-05
## 216 3.845267e-03 1.075520e-03 3.924782e-04
## 217 5.196292e-04 1.806645e-04 3.407010e-06
## 218 8.554237e-02 3.990930e-04 3.032016e-06
## 219 1.373687e-01 3.329614e-03 4.198625e-04
## 220 1.723599e-02 4.071708e-03 2.405327e-04
## 221 5.327130e-03 4.648939e-07 7.024422e-05
## 222 3.719616e-03 1.456977e-06 1.081819e-06
## 223 1.667128e-03 1.270110e-03 5.673613e-05
## 224 2.715177e-05 1.861680e-04 9.234248e-06
## 225 6.391750e-04 4.925333e-04 2.436434e-06
## 226 1.659375e-03 5.963184e-04 8.747001e-06
## 227 2.144181e-04 6.479437e-04 1.455334e-05
## 228 1.704364e-03 9.830575e-04 5.162707e-05
## 229 5.420229e-06 8.979209e-04 2.296227e-06
## 230 1.982374e-03 4.878086e-04 1.642254e-04
## 231 2.058373e-03 5.904200e-04 1.075272e-06
## 232 1.817259e-04 3.699088e-04 2.963868e-05
## 233 1.387966e-02 4.946634e-05 3.176804e-04
## 234 1.868260e-02 1.047171e-04 1.001600e-04
## 235 2.112845e-02 1.695623e-05 1.206730e-05
## 236 7.909670e-03 5.003936e-04 2.311055e-04
## 237 1.068676e-02 7.263311e-04 3.836641e-05
## 238 1.358680e-02 1.321189e-03 1.710536e-04
## 239 1.238061e-02 4.020817e-04 1.206861e-06
## 240 1.397312e-02 3.286416e-04 7.013634e-06
## 241 1.685399e-02 3.718615e-04 8.871371e-05
## 242 7.921604e-03 1.190169e-02 8.266498e-05
## 243 3.204152e-03 8.969921e-03 4.714603e-06
## 244 1.276286e-03 7.303032e-03 1.424050e-06
## 245 1.373272e-03 5.605288e-05 2.460293e-07
## 246 3.422440e-04 1.931002e-05 5.685318e-06
## 247 6.419709e-05 1.098214e-05 1.199119e-05
## 248 5.411641e-03 4.542728e-05 4.887800e-05
## 249 2.178309e-03 8.982002e-06 3.251983e-05
## 250 1.520321e-03 8.044810e-06 1.651381e-05

```

```
## 251 1.182500e-03 2.969758e-04 1.200257e-07
## 252 2.153059e-04 3.859930e-04 6.700049e-06
## 253 1.325817e-02 1.251470e-03 1.307310e-04
## 254 4.958153e-03 5.013678e-04 4.618631e-07
## 255 6.341696e-02 1.680850e-03 1.899857e-04
## 256 2.527790e-05 2.842851e-04 2.215470e-04
## 257 1.629876e-03 5.150040e-05 1.330997e-06
## 258 1.918358e-02 5.445259e-05 2.327256e-06
## 259 6.994088e-03 1.791798e-03 1.089334e-04
## 260 1.140393e-01 5.881681e-03 9.981679e-06
```