```
## Load libraries
library(splines)
library(MASS)
library(FDRreg)

## Loading required package:  fda
## Warning:  package 'fda' was built under R version 3.3.3
## Loading required package:  Matrix
##
## Attaching package:  'fda'
## The following object is masked from 'package:graphics':
##
##     matplot
## Loading required package:  BayesLogit
## Warning:  package 'BayesLogit' was built under R version 3.3.2
## Loading required package:  mvtnorm
## Warning:  package 'mvtnorm' was built under R version 3.3.2

library(curl)

library(doParallel) ##to make cluster (on Windows)

## Loading required package:  foreach
## Loading required package:  iterators
## Loading required package:  parallel

library(foreach) ##to use foreach function that does the parallel processing
library(doRNG) ##for reproducible seeds when doing parallel processing

## Loading required package:  rngtools
## Warning:  package 'rngtools' was built under R version 3.3.2
## Loading required package:  pkgmaker
## Warning:  package 'pkgmaker' was built under R version 3.3.2
## Loading required package:  registry
## Warning:  package 'registry' was built under R version 3.3.2
##
## Attaching package:  'pkgmaker'
## The following object is masked from 'package:base':
##
##     isNamespaceLoaded

##Source functions
source("../functions.R")

options(warn=1) ##print warnings as you go along
```

Define nulltype for Scott method:

```
nulltype <- "theoretical"
```

Nothing from alternative distribution, since this is for the global null:

```
folder <- "global_null"
```

1 Probability of being a false positive is 1

Perform estimation and save estimates:

```
print(folder)

## [1] "global_null"

load(paste(folder,"simResults_0.RData",sep="/"))
ntest <- ncol(zValuesSims)

pi0hatScottMat <- estimate_Scott_sims(zValuesSims, tme, nulltype)

pi0hatScottMean <- colMeans(pi0hatScottMat[,1:ntest])
pi0hatScottVar <- apply(pi0hatScottMat[,1:ntest],2,var)

pi0hat.ScottMat <- pi0hatScottMat[,1:ntest]
FDR.ScottMat <- pi0hatScottMat[,(ntest+1):(2*ntest)]

##save full results
save(file=paste(folder,"simResults_pi0x_Scott_0_full.RData",sep="/"),
     list=c("pi0hat.ScottMat", "FDR.ScottMat"))

##save summary results
save(file=paste(folder,"simResults_pi0x_Scott_0.RData",sep="/"),
     list=c("tme", "pi0",
            "pi0hatScottMean","pi0hatScottVar"))
```

Session info:

```
devtools::session_info()

## Session info -----------------------------------------------

##  setting  value
##  version  R version 3.3.1 (2016-06-21)
##  system   x86_64, mingw32
##  ui       RTerm
##  language (EN)
```

```
##   collate   English_United States.1252
##   tz        America/New_York
##   date      2018-09-17

## Packages -----------------------------------------------------

##   package     * version date
##   assertthat    0.1     2013-12-06
##   BayesLogit  * 0.6     2016-10-20
##   bindr         0.1     2016-11-13
##   bindrcpp      0.2     2017-06-17
##   codetools     0.2-14  2015-07-15
##   colorspace    1.2-6   2015-03-11
##   curl        * 0.9.7   2016-04-10
##   devtools      1.12.0  2016-06-24
##   digest        0.6.12  2017-01-27
##   doParallel  * 1.0.10  2015-10-14
##   doRNG       * 1.6     2014-03-07
##   dplyr         0.7.4   2017-09-28
##   evaluate      0.10    2016-10-11
##   fda         * 2.4.4   2014-12-16
##   FDRreg      * 0.2-1   2017-05-03
##   foreach     * 1.4.3   2015-10-13
##   ggdendro      0.1-20  2016-04-27
##   ggplot2       2.2.1   2016-12-30
##   glue          1.1.1   2017-06-21
##   gridExtra     2.2.1   2016-02-29
##   gtable        0.2.0   2016-02-26
##   highr         0.6     2016-05-09
##   iterators   * 1.0.8   2015-10-13
##   knitr       * 1.17    2017-08-10
##   lattice       0.20-33 2015-07-14
##   lazyeval      0.2.0   2016-06-12
##   magrittr      1.5     2014-11-22
##   MASS        * 7.3-45  2016-04-21
##   Matrix      * 1.2-6   2016-05-02
##   memoise       1.0.0   2016-01-29
##   mosaic        0.14.4  2016-07-29
##   mosaicData    0.14.0  2016-06-17
##   munsell       0.4.3   2016-02-13
##   mvtnorm     * 1.0-6   2017-03-02
##   pkgconfig     2.0.1   2017-03-21
##   pkgmaker    * 0.22    2014-05-14
##   plyr          1.8.4   2016-06-08
##   purrr         0.2.4   2017-10-18
##   R6            2.1.2   2016-01-26
```

```
##   Rcpp        0.12.13 2017-09-28
##   registry  * 0.3     2015-07-08
##   rlang       0.1.4   2017-11-05
##   rngtools  * 1.2.4   2014-03-06
##   scales      0.4.1   2016-11-09
##   stringi     1.1.1   2016-05-27
##   stringr     1.2.0   2017-02-18
##   tibble      1.3.3   2017-05-28
##   tidyr       0.7.2   2017-10-16
##   withr       1.0.2   2016-06-20
##   xtable      1.8-2   2016-02-05
##   source
##   CRAN (R 3.3.1)
##   CRAN (R 3.3.2)
##   CRAN (R 3.3.3)
##   CRAN (R 3.3.3)
##   CRAN (R 3.3.1)
##   CRAN (R 3.3.1)
##   CRAN (R 3.3.1)
##   CRAN (R 3.3.3)
##   CRAN (R 3.3.3)
##   CRAN (R 3.3.1)
##   CRAN (R 3.3.1)
##   CRAN (R 3.3.3)
##   CRAN (R 3.3.1)
##   CRAN (R 3.3.3)
##   Github (jgscott/FDRreg@8025d1a)
##   CRAN (R 3.3.1)
##   CRAN (R 3.3.3)
##   CRAN (R 3.3.3)
##   CRAN (R 3.3.3)
##   CRAN (R 3.3.1)
##   CRAN (R 3.3.1)
##   CRAN (R 3.3.1)
##   CRAN (R 3.3.0)
##   CRAN (R 3.3.3)
##   CRAN (R 3.3.1)
##   CRAN (R 3.3.1)
##   CRAN (R 3.3.1)
##   CRAN (R 3.3.1)
##   CRAN (R 3.3.1)
##   CRAN (R 3.3.1)
##   CRAN (R 3.3.3)
##   CRAN (R 3.3.3)
##   CRAN (R 3.3.1)
```

```
##  CRAN (R 3.3.2)
##  CRAN (R 3.3.3)
##  CRAN (R 3.3.2)
##  CRAN (R 3.3.1)
##  CRAN (R 3.3.3)
##  CRAN (R 3.3.1)
##  CRAN (R 3.3.3)
##  CRAN (R 3.3.2)
##  CRAN (R 3.3.3)
##  CRAN (R 3.3.2)
##  CRAN (R 3.3.3)
##  CRAN (R 3.3.0)
##  CRAN (R 3.3.3)
##  CRAN (R 3.3.3)
##  CRAN (R 3.3.3)
##  CRAN (R 3.3.1)
##  CRAN (R 3.3.1)
```