Short Explanation of the Fields of SPM struct
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SPM.xY                  Data
------------------------------------------------------------------------
    xY.P                filenames of images (with path)
    xY.VY               handle to images (from spm_vol)

       VY.fname         filename
       VY.dim           image dimensions
       VY.mat           transformation matrix
       VY.pinfo         plane info (scale factor for every image)
       VY.descrip       description string
       VY.n             ?
       VY.private.hdr   analyze header
       VY.userdata      user data (usually not used)


SPM.xX                  Design Matrix
------------------------------------------------------------------------
    xX.X                Design Matrix (raw values)
    xX.iH               column indices for condition effects partition
    xX.iC               column indices for covariates of interest partition
    xX.iB               column indices for constants
    xX.iG               colunn indices for nuisances covariates partition
    xX.name             regressor names (cell array)
    xX.I                indicator for factor levels
    xX.sF               factor names
    xX.K                filter for design matrix
    xX.W                pre-whitening matrix (WY = WX*b + We)
    xX.xKXs             struct for filtered and pre-whitened design matrix (K*W*X)
       xKXs.X           the filtered and whitened design matrix
       xKXs.tol         tolerance [max(size(xKXs.X))*max(abs(xKXs.ds))*eps]
       xKXs.ds          vector of singular values [diag(s) from [u,s,v]=svd(xKXs.X,0)]
       xKXs.u           u as in X = u*diag(ds)*v' [taken from  [u,s,v]=svd(xKXs.X,0)]
       xKXs.v           v as in X = u*diag(ds)*v' [taken from  [u,s,v]=svd(xKXs.X,0)]
       xKXS.rk          rank = sum(xKXs.ds > xKXs.tol)
       xKXs.oP          orthogonal projector on X
       xKXs.oPp         orthogonal projector on X'
       xKXs.ups         space in which this one is embedded
       xKXs.sus         subspace
    xX.pKX              pseudo-inverse of filtered and pre-whitened design
                        matrix
    xX.Bcov             covariance matrix of parameter estimates
                        [diag(Bcov) = variance of parameter estimates]
    xX.V                filtered and pre-whitened error covariance matrix
                        (K*W*xVi.Vi*W'*K')
    xX.trRV             trace of R*V (necessary for effective df)
    xX.trRVRV           trace of RVRV (necessary of effective df)
    xX.erdf             effective residual df (trRV^2/trRVRV)
    xX.nKX              filtered design matrix scaled for display

SPM.xC                  Covariate details
------------------------------------------------------------------------
    xC.rc               raw (as entered) i-th covariate
    xC.rcname           name of this covariate
    xC.c                covariate as appears in design matrix
    xC.cname            cellstr containing names corresponding to xC(i).c
    xC.iCC              covariate contering option
    xC.iCFT             covariate by factor interaction option
    xC.type             covariate type (1=interest,2=nuisance,3=global)
    xC.cols             columns of design matrix corresponding to xC(i).c
    xC.descrip          description of covariate
```

SPM.xGX	Global options and values
xGX.iGXcalc	global calculation option used
xGX.sGCcalc	string describing global calculations used
xGX.rg	raw globals (before scaling) [mean image intensity, not session-specific]
xGX.gSF	global scaling factor (applied to xGX.rg) [global mean, session-specific]
xGX.GM	global mean (gSF*rg = GM)
xGX.iGMsca	grand mean scaling option
xGX.sGMsca	string describing grand mean (/proportional) scaling option
xGX.iGC	global covariate centering option
xGX.sGC	string describing global covariate centering option
xGX.gc	center for global covariate
xGX.iGloNorm	global normalization option
xGX.sGloNorm	string describing global normalization option

SPM.xVi	Non-spericity options
xVi.iid	independent and identical errors (0/1)
xVi.I	see SPM.xX.I
xVi.sF	see SPM.xX.sF
xVi.var	factor to correct for inhomogenous variance (?)
xVi.dep	factor to correct of non-identical errors (?)
xVi.Vi	cell array with model components for error GLM (design matrices for error)
xVi.h	hyperparameter estimates for xVi.Vi (usually called lambda's)
xVi.Cy	spatially whitened covariance matrix of data (Y*Y') [used by ReML to estimate h)]
xVi.CY	fitted covariance matrix of data (Y-<Y>)*(Y-<Y>') [used by spm_Bayes]

SPM.xM	Masking options
xM.T	threshold masking values (-Inf = 'none')
xM.TH	nScan x 1 vector of analysis thresholds
xM.I	implicit masking (0 = 'none'; 1 = zero/NaN)
xM.VM	handle to explicit masking image (see SPM.xY.VY)
xM.xs	struture describing masking options

SPM.xVol	information about image dimensions etc.
xVol.M	transformation matrix vox2mm
xVol.iM	transformation matrix mm2vox
xVol.DIM	images dimensions
xVol.FWHM	smoothing filter width (in voxels)
xVol.R	vector of resel counts (in resels)
xVol.S	Lebelgue measure of volume (in voxels)
xVol.VRpv	handle to Resels/voxel images (RPV.img) (see SPM.xY.VY)

SPM.Vbeta	parameter estimates
	handle to beta images (see SPM.xY.VY)

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SPM.VResMS              residual sum of squares
------------------------------------------------------------------------
                        handle to images of residuals (ResMS.img)


SPM.VM                  mask image
------------------------------------------------------------------------
                        handle to mask images of analysis voxels
                        (mask.img)

SPM.xCon                structure holding contrast information
------------------------------------------------------------------------
    xCon.name           contrast name
    xCon.STAT           type of statistic (T/F)
    xCon.c              contrast vector/matrix
    xCon.X0             reduced design matrix (spans design space under Ho)
    xCon.iX0            indicates how contrast was specified
                        if by "columns for reduces design" then column
                        indices, otherwise either 'c', 'c+', or 'X0'
                        see spm_FcUtil
    xCon.X1o            remaining design space (orthogonal to X0)
    xCon.eidf           effective interest df (numerator df)
    xCon.Vcon           handle to contrast image
                        (con_xxxx.img,ess_xxxx.img)
    xCon.Vspm           handle to statistical image
                        (spmT_xxxx.img/spmF_xxxx.img)


SPM.Sess                regressors in design matrix (session-specific)
------------------------------------------------------------------------
    Sess.U              experimental regressors

         U.name         name of regressors
         U.ons          onset vector
         U.dur          duration (0 = events)
         U.P            parametric modulations
           P.name       name of parametric modulator
           P.h          order of expansion
           P.i
         U.dt           internal temporal resolution RT/T
         U.pst          peri-stimulus time (specifies occurence of
                        scans in relation to events)

         C              covariates
         C.C            nScan x number of covariates matrix
         C.name         cell array with names of covariates

         row            indices of rows of design matrix belonging to
                        the session
         col            indices of columns of design matrix belongin to
                        the session
         Fc             structrue holding information on F-contrasts
         Fc.i           index of F-contrast (?)
         FC.name        name of F-contrast


SPM.xBF                 structure with information if basis functions
------------------------------------------------------------------------
    xBF.name            name of basis function of set of bassi functions
    xBF.T               time bins
    xBF.T0              reference bin
    xBF.UNITS           onsets in scans or seconds
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    xBF.Volterra        (1 = linear, normal HRF, 2 = trial interactions)
    xBF.dt              internal temporal resolution (RT/T)
    xBF.length          length of basis functions (in sec)
    xBF.order           ? (1 = HRD no order)
    xBF.bf              vector with basis functions


SPM.xsDes               structure describing design
SPM.SPMid               version information of SPM
SPM.swd                 analysis directory (holding SPM.mat)
SPM.nscan               number of images
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