Help file for the function `mcmc.dp.specd`

The model is $y_{i,j} \sim N(\mu_{i,j}, \sigma_e^2)$, where $\mu_{i,j}$ has mean $\text{sum}(X_{i,j} \beta)$, variance $\sigma_s^2$, and correlation corresponding to the mixture of $nt$ non-central Matern correlations. It is assumed that the columns of $y$ are independent of each other. For complete details on the model, see Reich BJ, Fuentes M (2012). Nonparametric Bayesian models for a spatial covariance. *Statistical Methodology*, **9**, 265-274.

**Inputs**

- **y** ns x nreps matrix of responses
- **X** ns x nreps x p array of predictors ($X_{,,1}$ should be all ones)
- **s** ns x 2 matrix of spatial coordinates
- **nt** Number of mixture components in the DP prior
- **noncentral** TRUE/FALSE, should the non-central Matern be used?
- **keep.h** Spatial distances at which to compute the posterior of the spatial correlation
- **cut** ns x nreps matrix of cutoffs. MCMC returns $P(\mu_{i,j} > \text{cut}_{i,j}|\text{data})$
- **iters** Number of MCMC samples
- **burn** Number to discard as burn-in
- **update** Number of iterations between graphical displays
- **init.range** Initial value for the spatial range
- **init.nu** Initial value for the Matern smoothness
- **mx.range** The range's prior is Unif(0,mx.range)
- **mx.nu** The smoothness' prior is Unif(0.5,mx.nu)
- **sd.beta** The elements of $\beta$ have $N(0,\sigma^2_e)$ priors
- **ae, be** The nugget has prior $\sigma^2_e \sim \text{InvGamma}(ae,be)$
- **as, bs** The partial sill has prior $\sigma^2_s \sim \text{InvGamma}(as,bs)$

**Outputs**

- **fit.mn** Posterior mean of $\mu$
- **fit.var** Posterior variance of $\mu$
- **fit.gcut** Posterior probability that $\mu$ is greater than cut
- **h, COR** Posterior samples of the spatial correlation at distances $h$
- **beta** Posterior samples of $\beta$
- **params** Posterior samples of various model hyperparameters
- **dev** Posterior samples of the deviance
- **DIC, pD** DIC and effective number of parameters