Dear James (CC Jim),

Here are directions for making the data file that I use for the reconstruction program.

First I run the IDL program, “get\_all\_data.pro” in the directory where I want to put the data for this event. Note that there should be directories below this directory, named “FGM” (for regular FGM data), “FGM\_L3” (for the SGM magnetometer data), “EDP” (for the electric field data), and “FPI” (for the FPI data). The electric field data is not needed by the reconstruction program, but I included it in the data file for use in other programs.

Before running “get\_all\_data.pro”, define the time range “trange”. Then the data will be saved as ASCII files in the directories named above. For the example files I’m sending you, it saves one second of data for your December 24, 2016 event.

(“get\_all\_data.pro” calls several other IDL programs. The “make\_ascii\_mms\_fpi…” programs came from Hiroshi Hasegawa (based on a program by Kitamura). I got the other programs from Eric Grimes. Then I slightly modified them to run within “get\_all\_data.pro”.)

Then go into the FPI directory and run “ReadMmsIntro.m” in Matlab. That will set up the input file. The end result is a file that has data from all four spacecraft at the same time steps.

In “ReadMmsIntro.m”, these are the variables that you might want to change:

iBurst = 0 for data at 30 ms resolution, 1 for data at FGM burst mode resolution, = 2 for data at any resolution lower than that of SGM (I typically use 1 or 2 ms)

dtBurst2 = resolution of the data that this program writes if iBurst=2

iBurstE = 0 for fast mode electric field data, = 1 for burst mode electric field data. Since the reconstruction program, and most of my other programs, don’t need the electric field, I often use 0

iQuarterFPI = 0 for regular FPI data, = 1 for quarter spin resolution data. Normally use 0. (I’m including in the root directory a program “mms\_fpi\_quarter\_moms\_crib.pro” to get that data if you want it.)

stime = string with the UT time in hours and seconds - the time will be measured in seconds relative to this time

hr0 = hour (should be the same as in stime)

mn0 = minute (should be the same as in stime – obviously, stime could be generated from hr0 and mn0)

iCut = 1 - leave this equal to 1 and make the times immediately below a subset of the times of the data in “get\_all\_data.pro”.

tCut1 = beginning time for analysis (I put it 30 ms from the start time of the IDL data - you might have to do that)

tCut2 = end time for analysis

See if this works for you and let me know if you have any problems.

Best regards, Richard