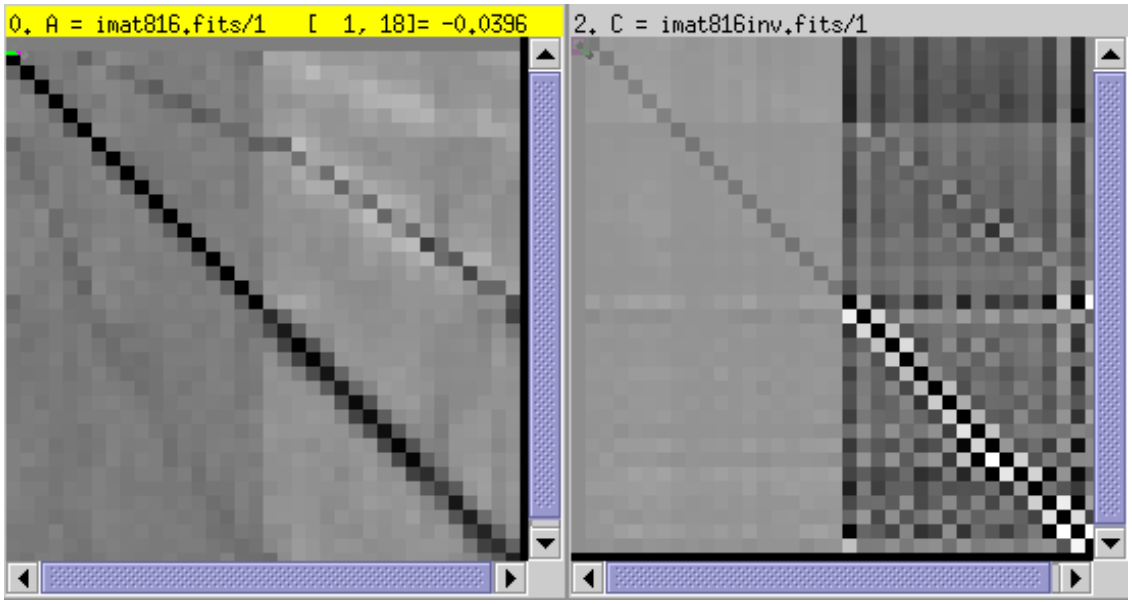
Date: 8/15/2001

From: Tony Denault

Subject: IMAT Calculation: IRTF and Gemini

1. Mark Chun (gemini) was kind enough to forward us a IMAT and Inverse matrix. The IRTF just got their system built up take interaction data., but wanted help to verify if results / procedures.

   Here is Marks Data:

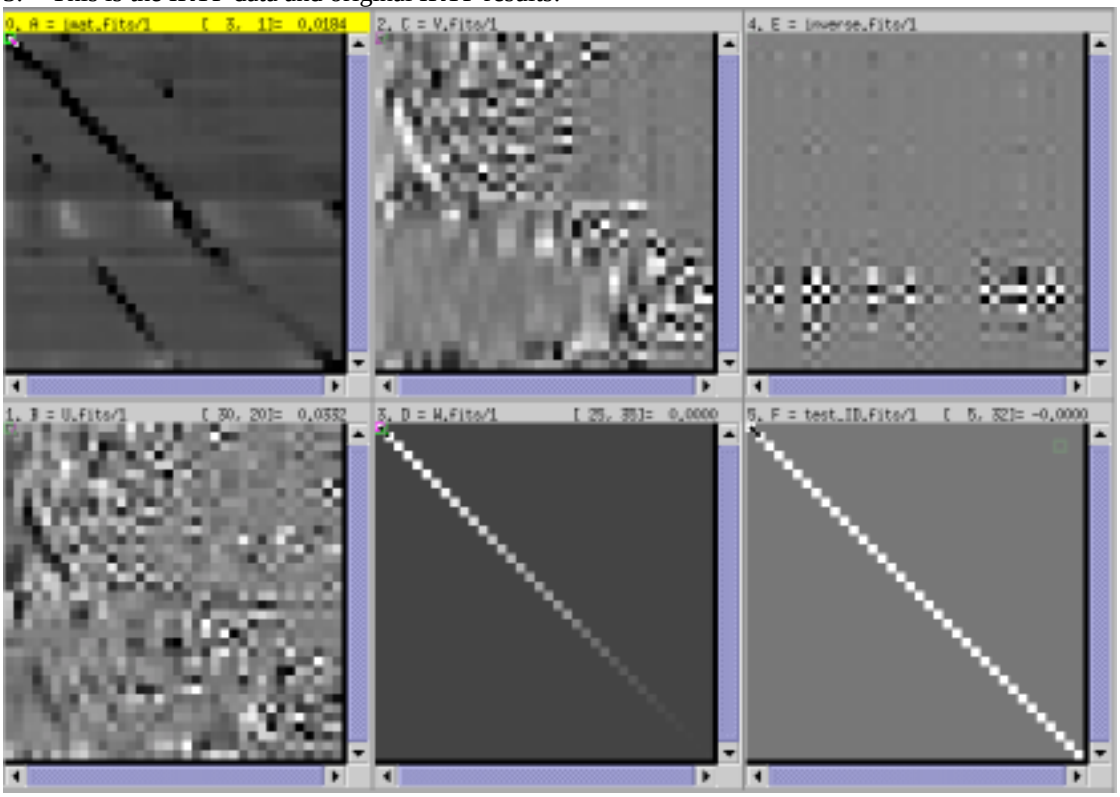


2. After comparing Mark IDL code and our, the only difference was calculating the 1/w of eigenvalues. Mark's code disregarded values that were low compared to the max, where I used all values (just disregarding values close to 0).
   Mark code did: if w/max(w) > 0.01, then 1/w else 0.
   Where I did: if(w < 1e-5) then 1/w, else 0.

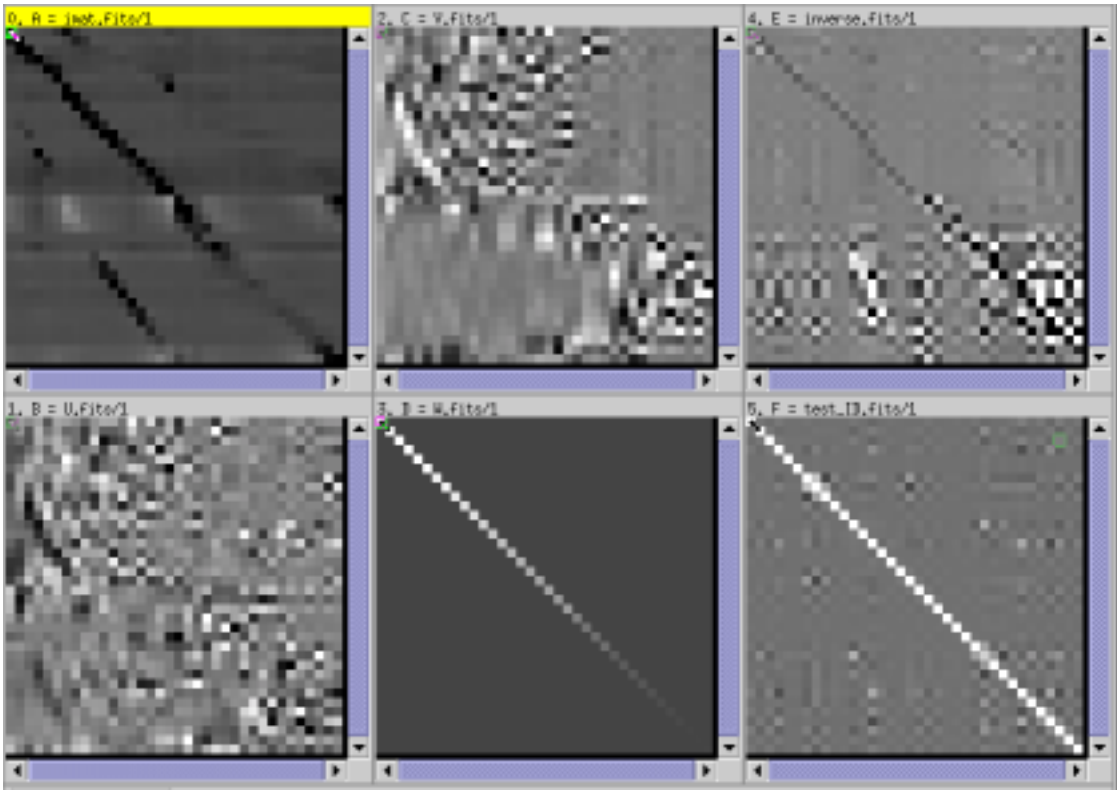
   After I modify my code to reject w[I] in a similar manner, either code produced the same result using either the IRTF or Gemini data.

   There is another difference: The Genini imat is a [37][36] matrix. I notice Malcolm's C array typically index by 1 (not the C convension [0]). There seems to be no reason for this. In the IRTF re-write I use the proper C indexing: I[0][0] is 1st data element. This has no effect on the Imat caculations.

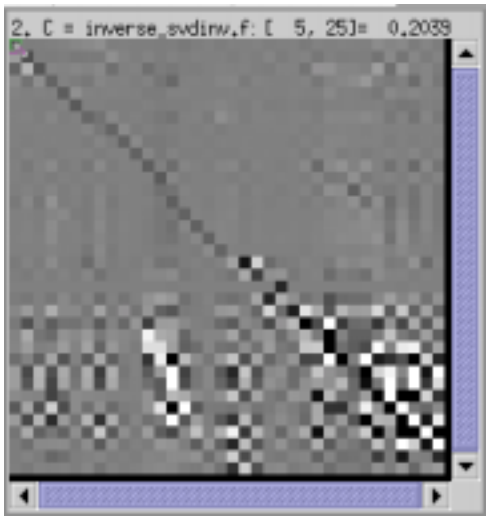
3. This is the IRTF data and original IRTF results:



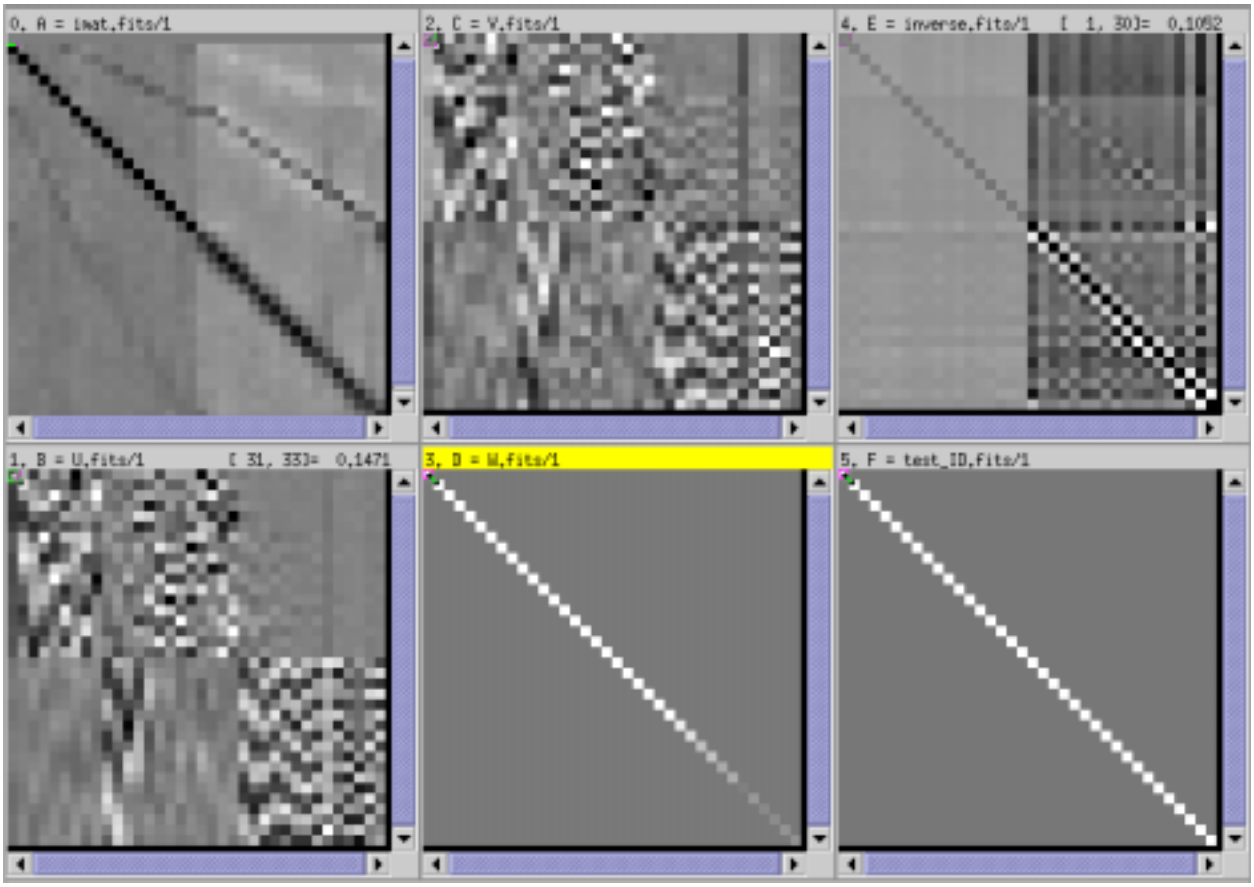
4. This is the IRTF data with the w/max(w) > 0.01 modification:



IRTF data using the Gemini function:



5. This is the Gemini Data run thought the IRTF code. I removed the row containing all 0, so it a [36][36]



Note:

Canvas 0 show the Imat data: Imat[s][a]
Canvas 1/2/3 show the produces of the SVD function: U[s][a], V[a][a], and W[a][a].
Canvas 4 shows the inverse: inverse[a][s].
Canvas 5 show the Identity matrix: idenity[s][s] = imat[s][a] * inverse[a][s]