Improving Cross-Calibration

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The Charge

- In-flight data show discrepancies
  - Cluster temperatures and fluxes
  - Blazar fluxes from simultaneous observations
    - SNR line fluxes
- Missions characterize systematic uncertainties internally and independently
- Assuming we *should*, how does IACHEC *change* a mission's calibration?

The Politics

- Ground cal sets initial instrument parameters
  - Effectiveness depends on funding
  - Cal is limited to available instruments
- Flight cal depends on mission priorities
  - Is 3-5% of time acceptable/allowable?
  - Users drive need for agreement of missions
  - Managers require benefit to project, limiting cross-cal

A Proposal

- Attend/read Prof. Meng's presentation (Wed. 9:00AM)
  - Start with C_{ij} = Counts for mission i (1..N), source j (1..M)
  - Assume "true" areas A_i, "true" fluxes F_j
  - Estimate F_j by $f_j = C_{ij} / a_i$ (a_i = 1st estimate of A_i)
  - Method determines "best" $\underline{F}_j$, computes w, and "better" $\underline{a}_i = a_i^{w} (C_{ij}/\underline{F}_j)^{1-w}$, brings f_j closer *but not precisely* to $\underline{F}_j$
  - $w = 1/(1+M\tau^2/\sigma^2)$, τ = "a priori" st.dev. in ln(a), σ = st. dev. in $\ln(C_{ij})$
    - w = 0 means instrument is very uncertain
- IACHEC team sets t for each instrument, runs Meng's analysis
  - IACHEC team recommends changes from a_i to $\underline{a}_i$
  - Process runs for each of many bandpasses "independently"

Sample Variances