High time-resolution calibration information

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• Calibration currently provided with minute granularity

• Evidence that calibration changes on sub-minute time-scale affects stochastic analysis

• Would generally like greater calibration time resolution
Adaptive measurement of calibration line amplitude and phase

- Focus on narrow (~10 Hz) band about calibration line freq
  - AS_Q ≈ white noise + \( A(t) e^{i\phi(t)} \) (calib line)
  - Calibration line is \( A_0 e^{2\pi ft} \)

- Kalman adaptive filter designed to seek phaser rotating with calibration line frequency in AS_Q, EXC_ETMX and track changes with time in presence of measurement noise

- Report ratio \( A(t)/A_0(t), \phi(t) \)
Example

- H1 973.3 Hz line, triple coincidence S2 segment 2, 10 Hz time resolution
- $\langle A/A_0 \rangle = 25.41$
- $\langle (A/A_0)^2 \rangle = 0.30$