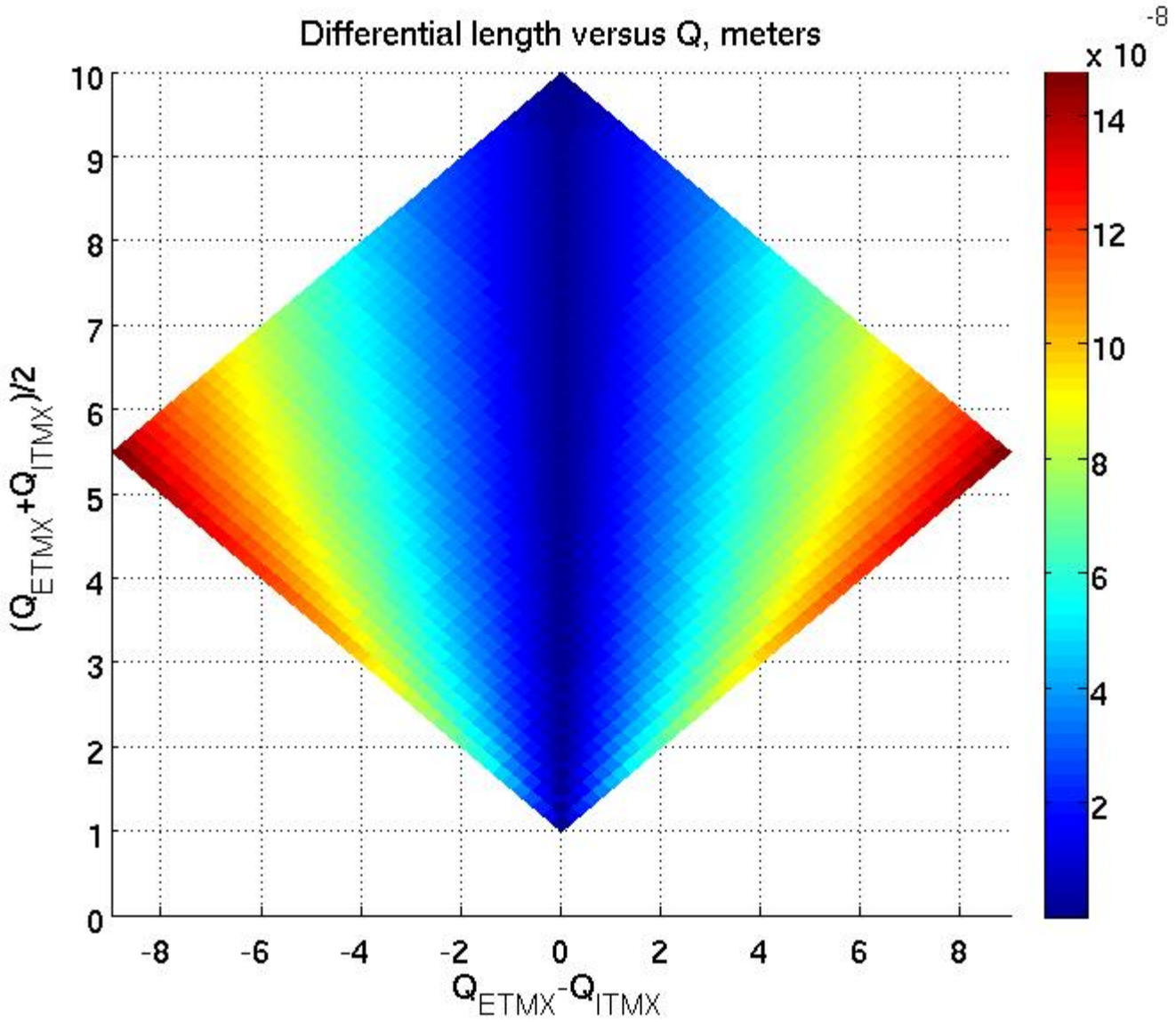
Sad results of XARM measurements

attempts to minimumize RMS
of peaks from the spectrum of channel
C1:LSC-XARM-CTRL
as we change the values of suspension
damping gain in channels
C1:SUS-Mirror-SUSPOS_GAIN

(Mirror = ‘ITMX’ or ‘ETMX’)

Reminder (from 2007) : theoretical idealized model



Essence of what has been done

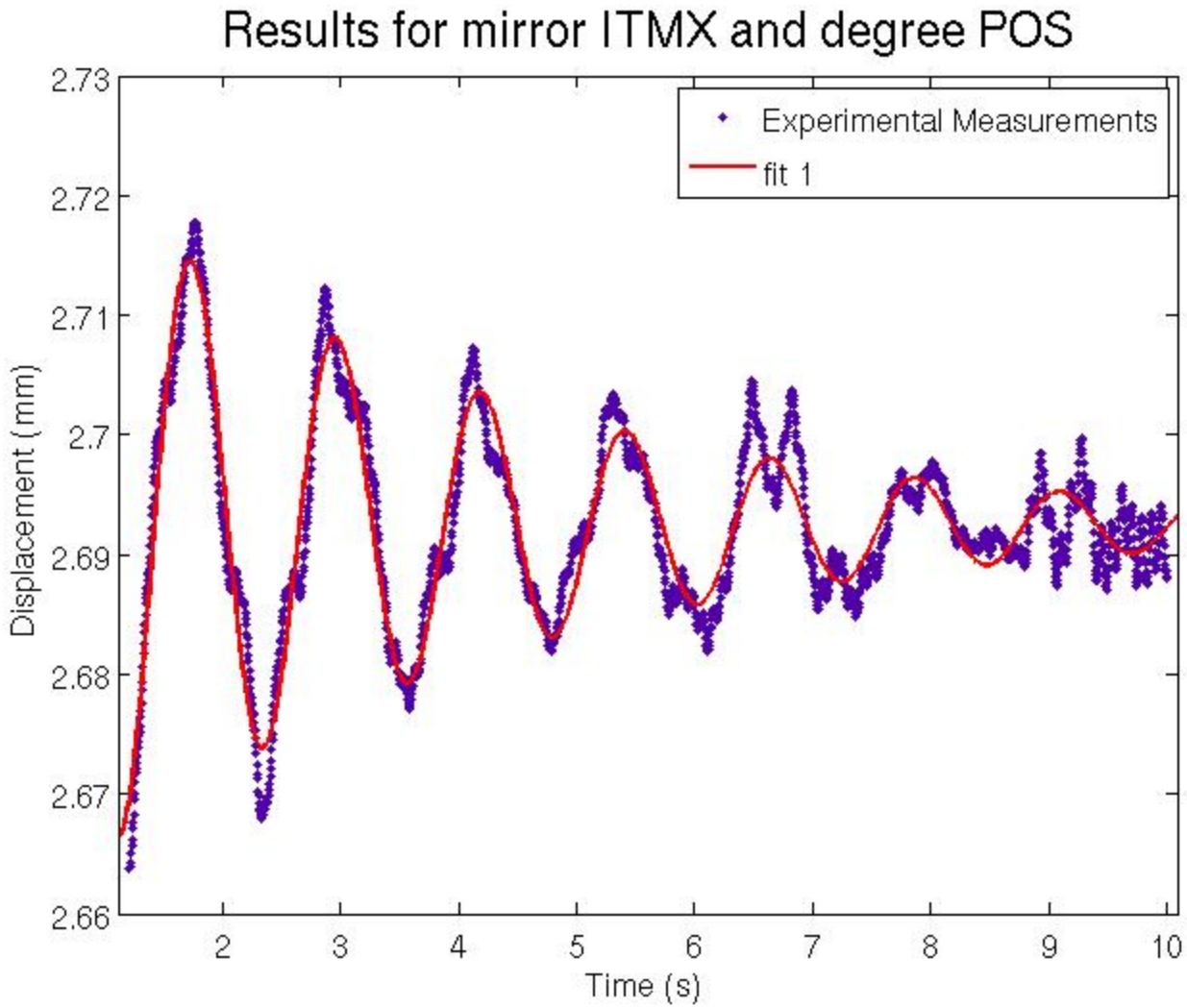
- I measured dependences of RMS in three regions
  (peak near 0.8Hz, peak near 3Hz,
  RMS in the region 0.6hZ < f < 3.6Hz)
  on the values of suspension damping gains
  of ITMX and ETMX
  (channels C1:SUS-ITMS_SUSPOS_GAIN,
  C1:SUS-ETMX_SUSPOS_GAIN) ,

and converted them into dependences on Q-factors
Q_{ITMX} and Q_{ETMX}

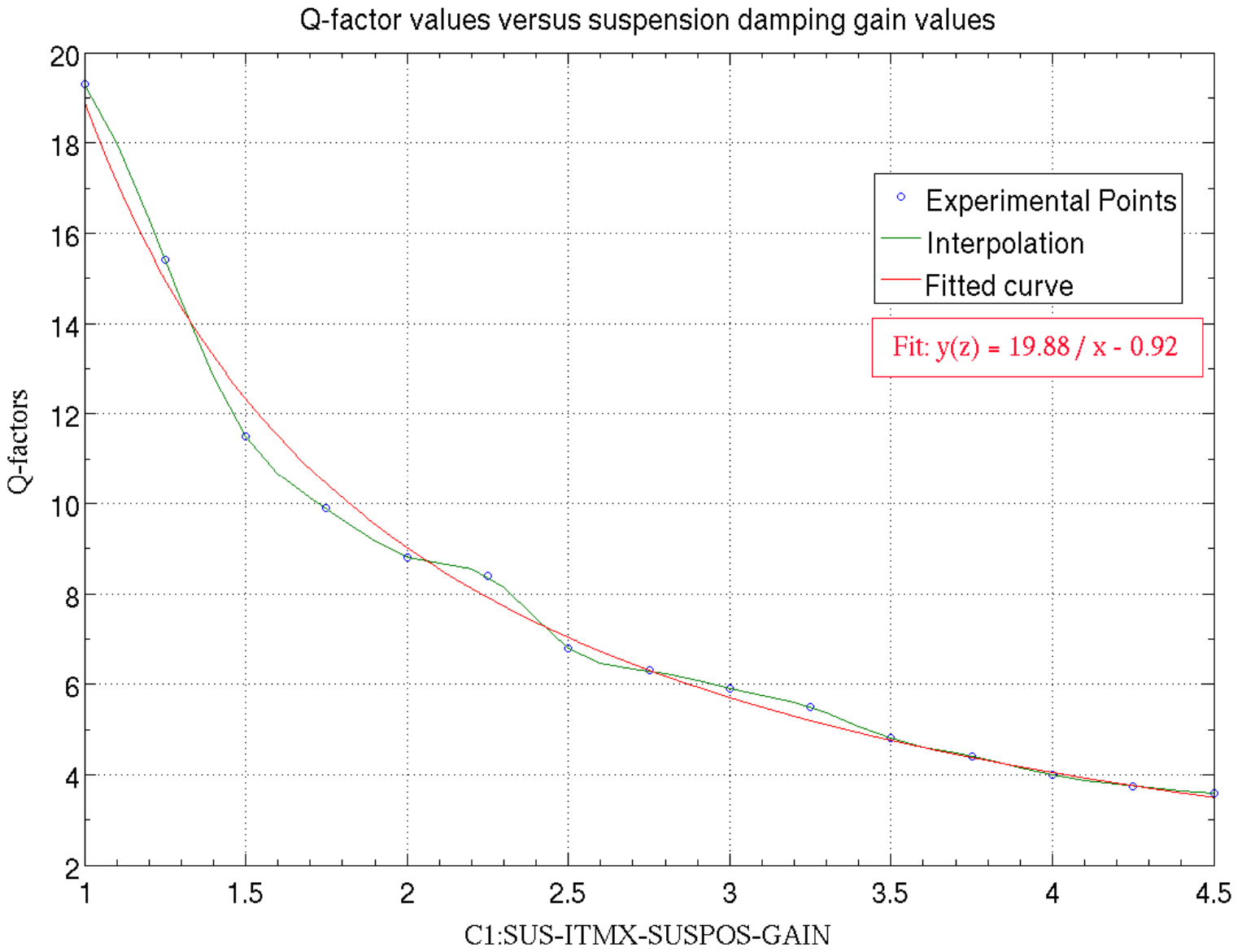
(for comparison with theoretical model)

Determine Q-factors

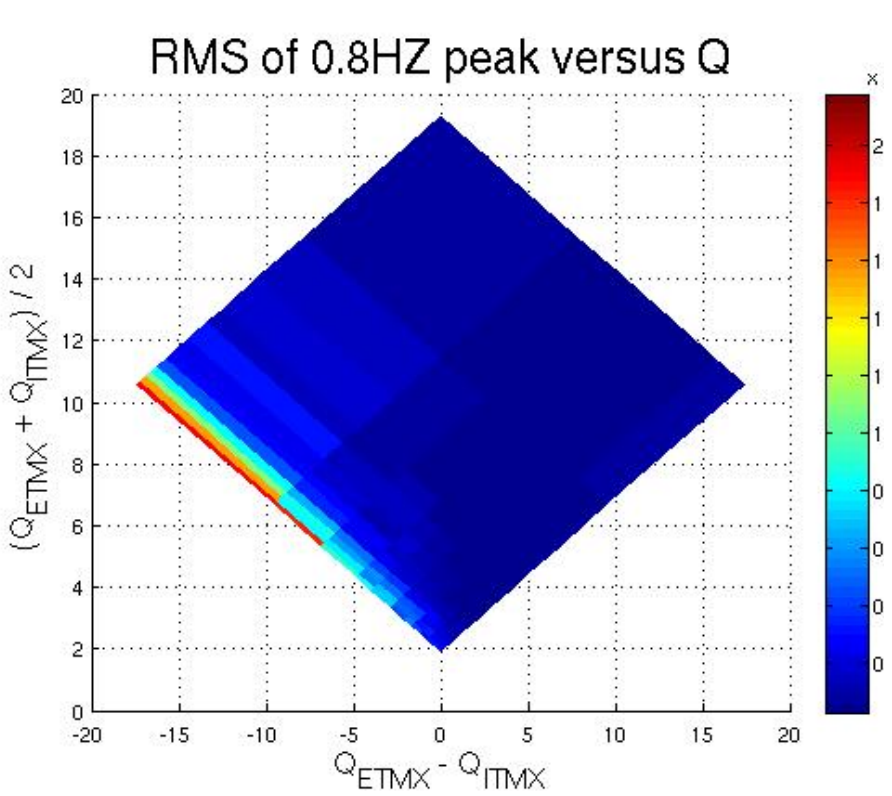
- Ringdown measuremets. $Q = \pi f_0 \tau_0$

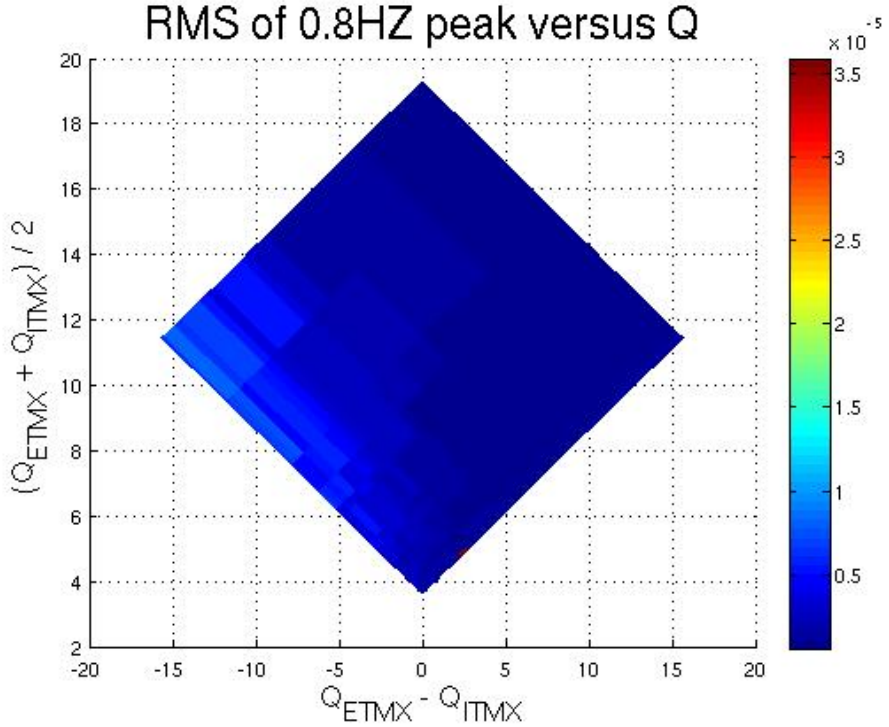


Result: Q_{ITMX} and Q_{ETMX} for each value of suspension damping gain



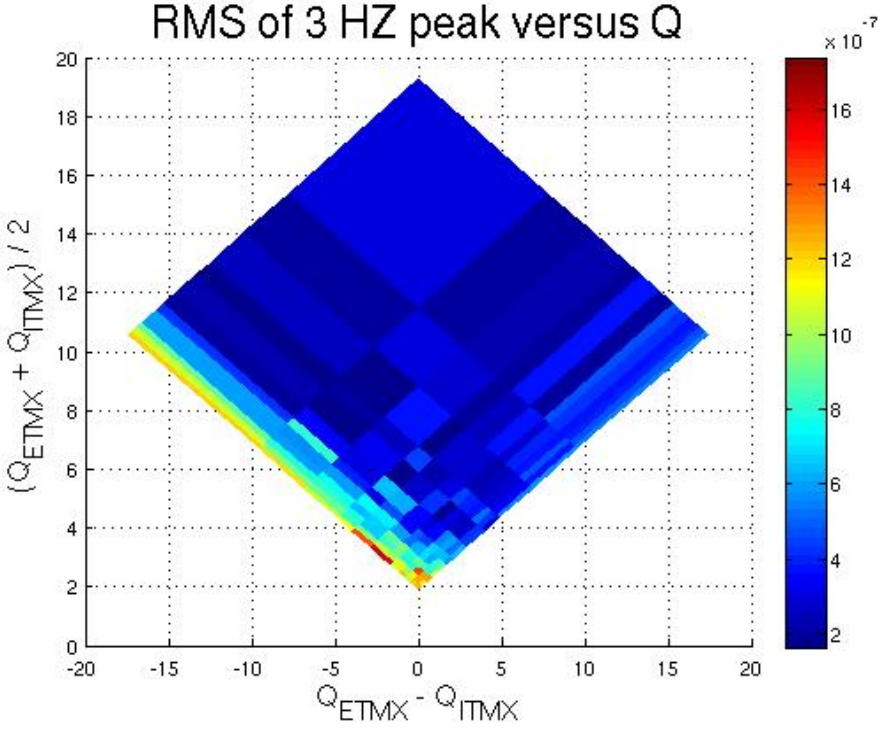
Results of measurements of RMS

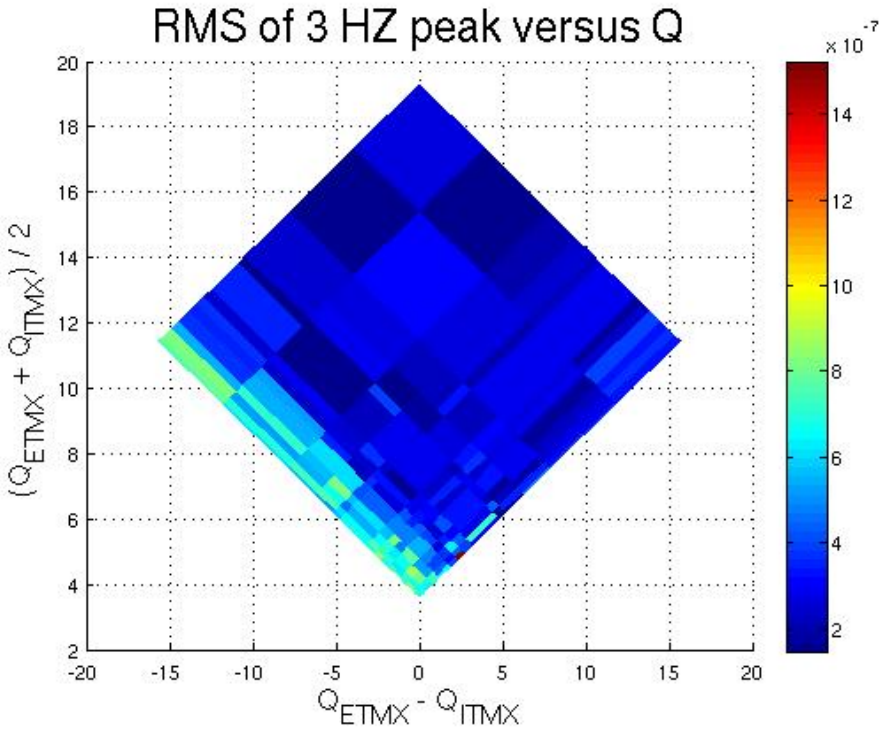




RMS of peak at 0.8 Hz

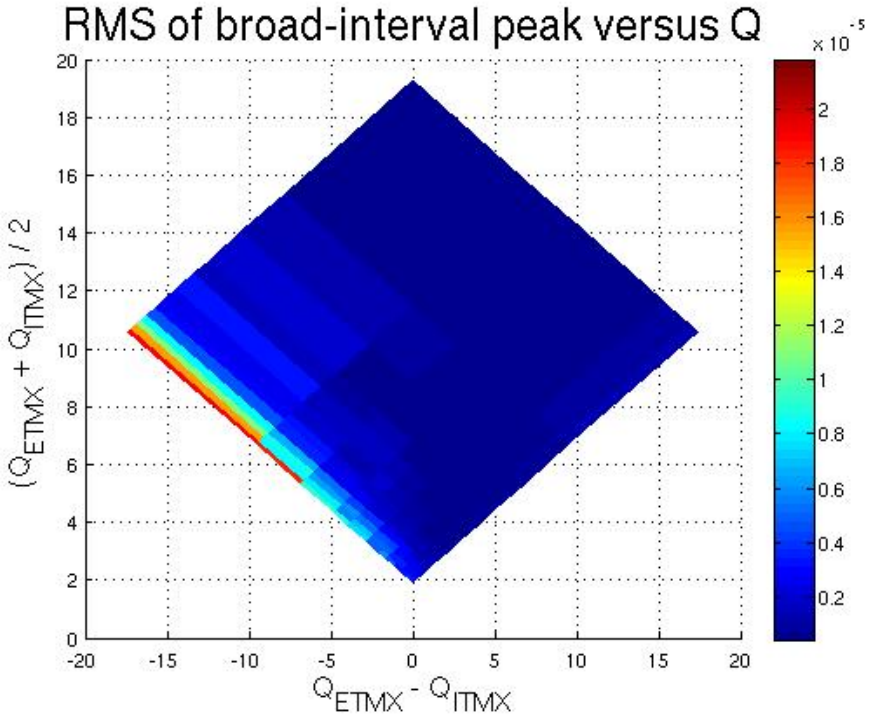
Results of measurements of RMS

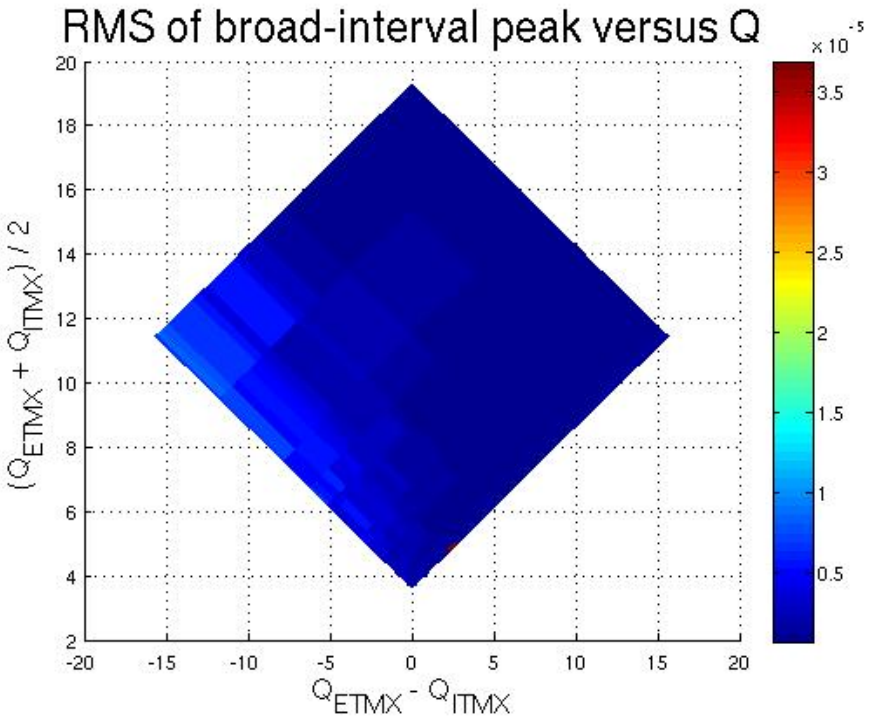




RMS of peak near 3.0 Hz

Results of measurements of RMS





RMS of peak calculated in a “broad” interval

$$0.6 \leq f \leq 3.6 Hz$$

Comment about the dependences

- Good repetitiveness from day to day (night to night), so there is no reason not to believe to those measurements.

- Cannot see a clear narrow area of minimum – trouble for me.