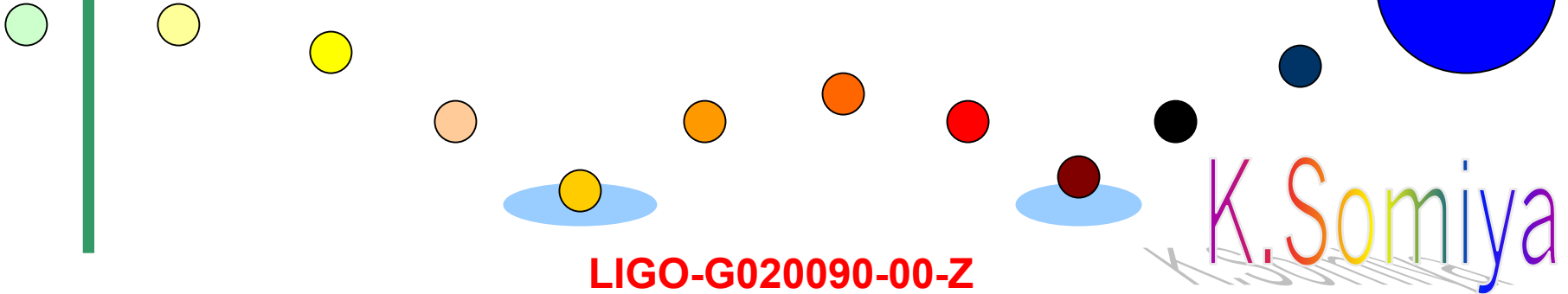


2) Accomplishment of Japan RSE '98-'01

-- Result of Osamu's RSE Experiments --

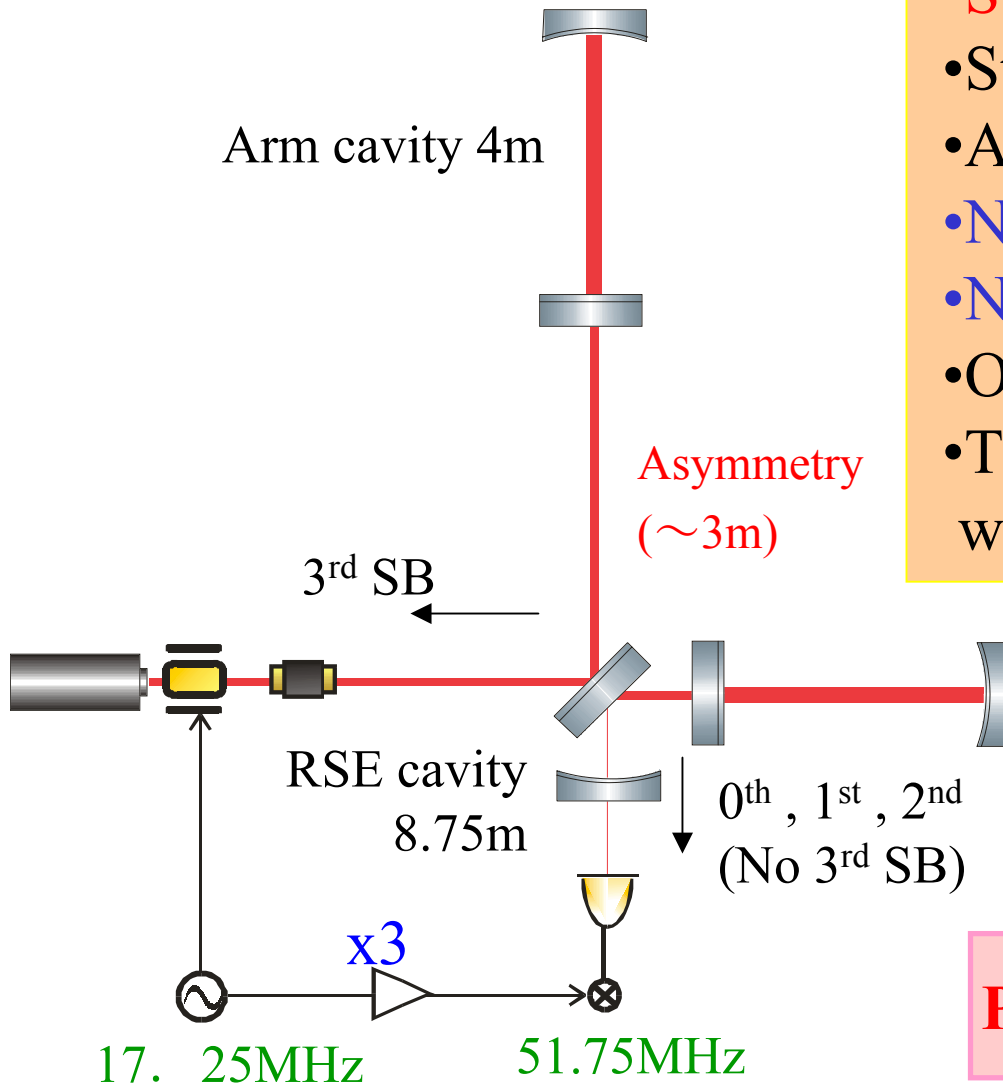
Kentaro Somiya
University of Tokyo

LSC Meeting @ Livingston 2002



LIGO-G020090-00-Z

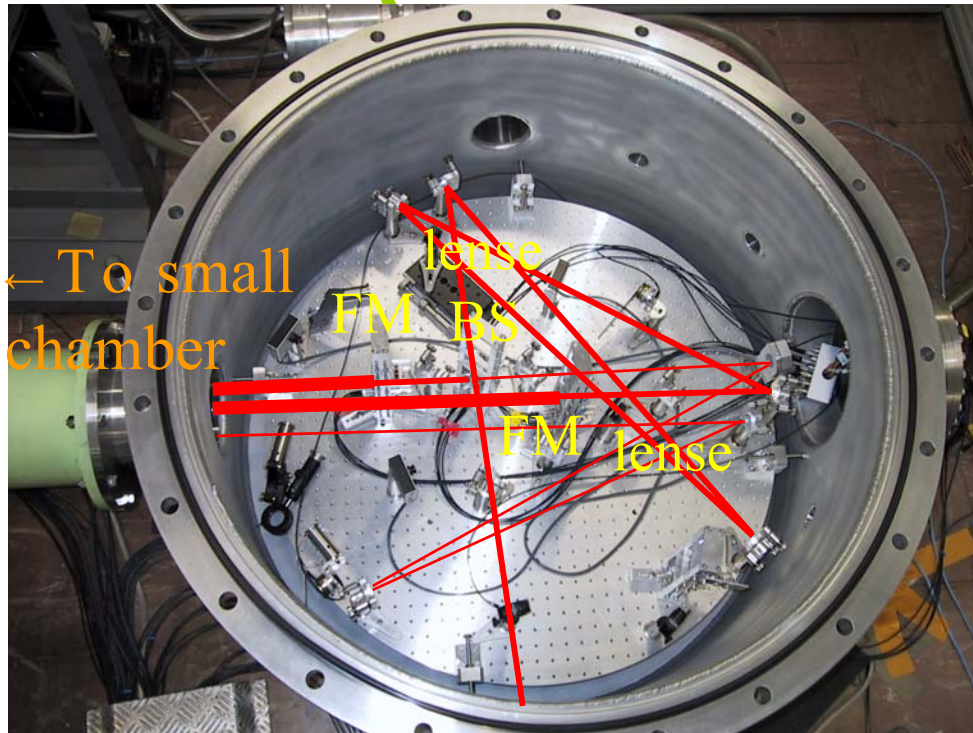
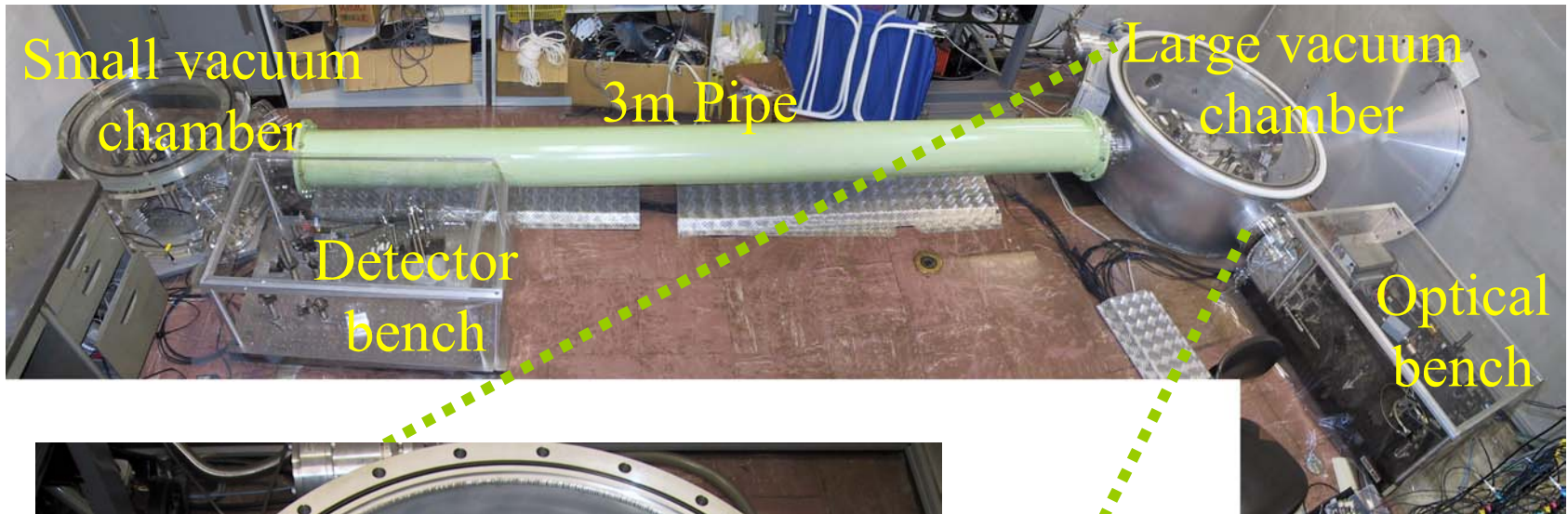
Review of Japan RSE 1998-2001



- **Suspended** by single pendulum.
- Staying in **vacuum** chamber.
- Aligned in parallel (**not L**).
- **No Power Recycling.**
- **No detuning.**
- Only **single modulation.**
- Third harmonics demodulation with 60 degree asymmetry.

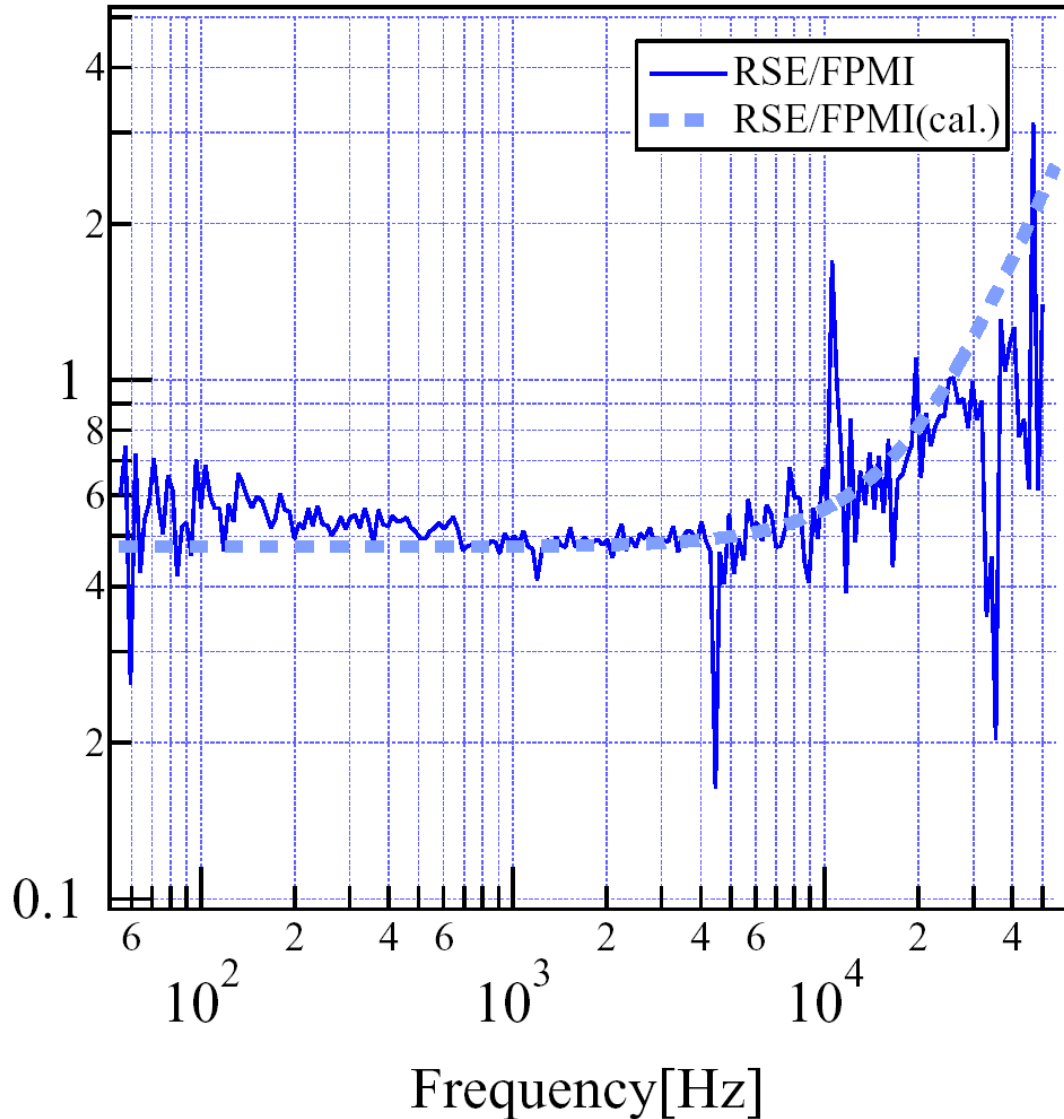
Prototype RSE interferometer

Experimental Setup



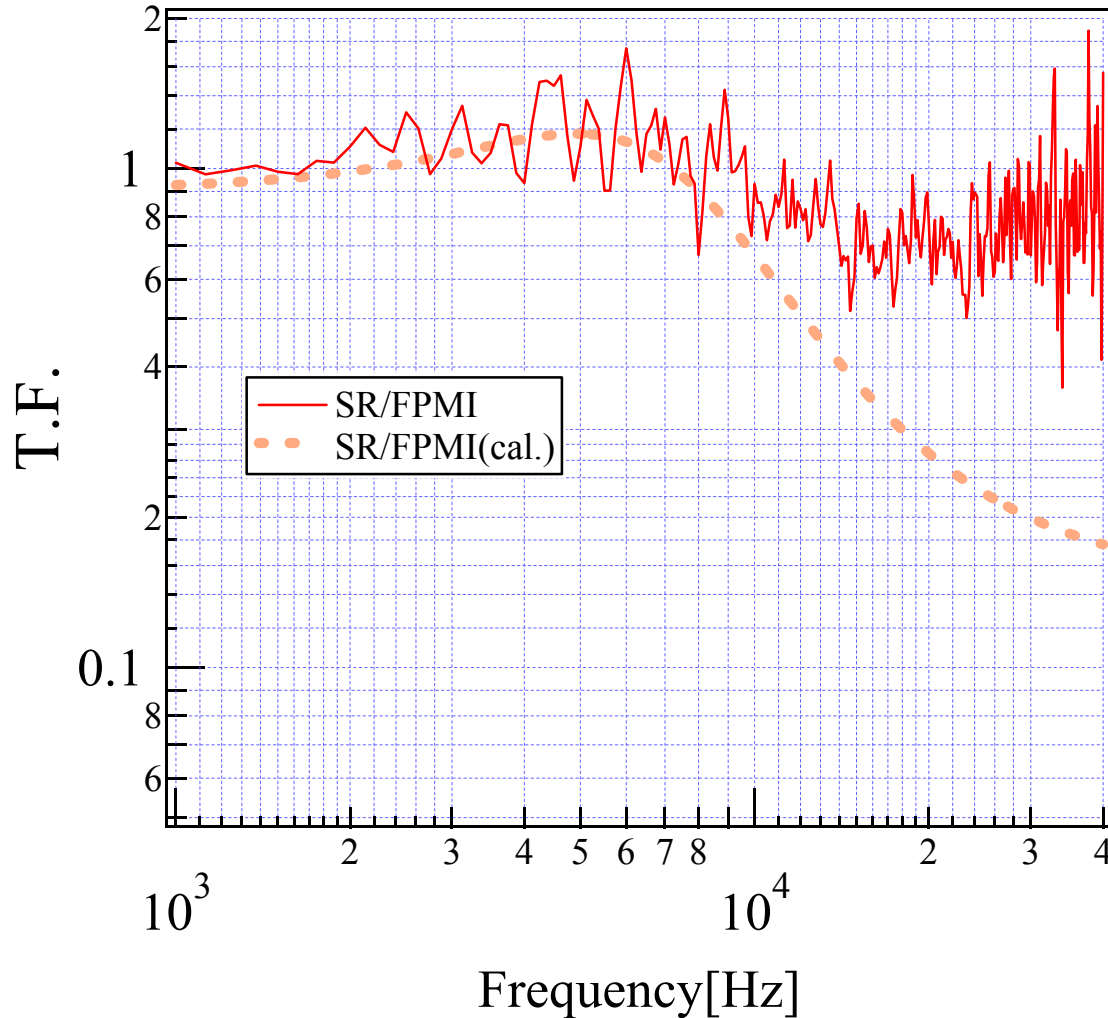
Compact single pendulum with eddy current damping.

Result : RSE lock!



- **Suspended RSE lock.**
- **Typically 10min. lock.**
- **Relative TF (Signal Gain) is measured with end mass swept mechanically.**
- **Details are written on Osamu's doctor thesis.**

Interesting! : SR lock with natural detuning



- **SR is locked on a side robe of error signal (Polarity is changed).**
- **Unstable lock produces natural detuning effect.**
- **It seems to be averaged for higher frequencies.**

Next Step

- **Stabilization**
- **Power Recycling**
- **Detuning**
- **Sweeping??**

We built a new RSE experiment in Feb. 2002!!