



New senior member application

LIGO-G1000906-v1

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UTB



Past research activity

- Started to work on GW detector in 1991
 - Bachelor thesis on direct measurement of loss angle in mechanical pendulums, Perugia, Italy
- Ph.D. in Physics, 1998
 - Design of the Virgo last stage suspensions, Perugia, Italy
- Research Assistant, 1998-2000
 - IGR, University of Glasgow, mechanical loss investigation on fused silica and sapphire, design and construction of hydrogen-oxygen pulling machine for GEO600 fibres, first suspension test



Past research activity

- Lecturer, 2000-2007



- IGR, University of Glasgow



monolithic fused silica suspensions in GEO600, laser pulling machine, aLIGO quad suspension design, coating research

- Senior Researcher, 2005-2007

- INFN, Firenze



low temperature thermal conductivity measurements, silicon fibres, fused silica suspensions for Virgo

- INFN associated, 2007-2010

- Coating research, teaching at school

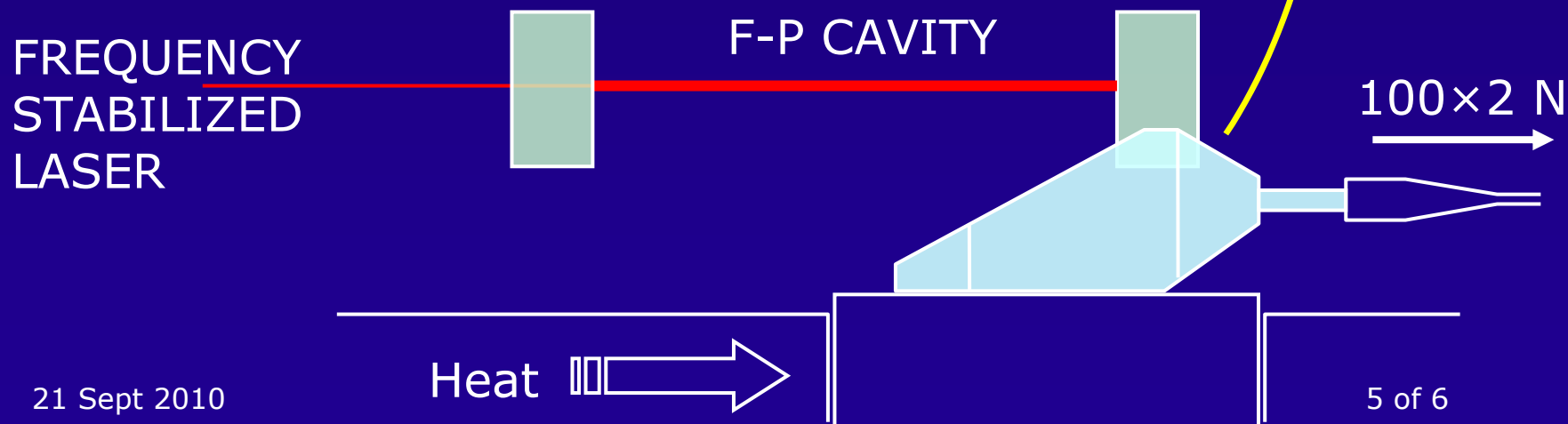


Proposed activity for aLIGO

- Investigation on creep noise
 - Shear stress due to mirror weight and thermal gradient due to thermal compensation may cause creep in the silicate bonding layer
 - Previous works have searched for indirect evidence of such noise (violin modes amplitude monitoring) *B Sorazu et al 2010 Class. Quantum Grav. 27 155017*
 - Direct detection is proposed here
- Relevance for aLIGO
 - Minimizing the risk of having creep noise from bonding
 - A test for thermal compensation

Direct measurement of creep noise

- Measurement done on samples
 - Test mass is pulled by its own weight → “slow” motion
 - Low mass ear moves very fast when tension is released
 - Vacuum conditions to avoid possible effect of air
 - F-P cavity to detect events of magnitude 10^{-12} m



Proposed activity for aLIGO

- Samples
 - Samples will be prepared by the Glasgow group
- Test facilities required
 - Vacuum tank with temperature controlled heat source
 - Frequency stabilized laser (existing)
- Resources available at UTB
 - Lab space (...to be equipped)
 - Clean-room-conditions laser-lab with a stabilized 10W YAG (Malik and Volker)

