

via E. Amaldi
56021 S. Stefano a Macerata – Cascina (Pisa), Italy
Tel: 0039 050 752325
Fax 0039 050 752 356
<http://www.ego-gw.it>

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**Internship Opportunity
at the European Gravitational Observatory
site of the Gravitational Wave Detector VIRGO**

Department	Interferometer Operation		
Trainee Supervisor	Paolo Ruggi	Position	Applied Physicist
Telephone	+39 050 752 349	E-mail	paolo.ruggi@ego-gw.it
Training team	P. Ruggi, V. Dattilo		

Internship description

Duration 4/5 months

Discipline: Modeling and Control

Title: Simulation and Control of a generic Virgo-like suspended mirror

Description: Virgo is a gravitational wave detector aiming at the detection of gravitational waves generated by galactic and extra-galactic astrophysical sources. It is based on a laser interferometer with arms 3 km long located at EGO near Pisa (Italy). The candidate for this internship will be asked to develop a methodology of optimization for the automatic control of a Virgo-like suspended mirror. The figure of merit will be the control accuracy combined with low level of injected noise above the unitary gain frequency. The identification of the system will be performed in simulation, adopting a mechanical model of a generically complex composed pendulum. A peculiarity of a multi-stage suspension is the possibility to apply the feedback correction directly to the suspended mass, or to an upper stage of the suspension, or to many points at the same time; a specific task will be to find the best configuration of the actuation scheme. Another relevant part of the work will be the identification of the mechanical parameters critically connected to the control performances; it will provide important indications for a correct design of Advanced Virgo suspensions.

Appropriate qualification level: at least three years of study in engineering at university level. Good background in control systems, electronics and mechanics

**To apply please send your CV by e-mail to secretariat@ego-gw.it
before the 01/03/2010**