

Allegato A PROGETTO Scienza senza Frontiere – Brasile

Name of the doctoral program
PhD in Mechanics
Full degree <input checked="" type="checkbox"/> Cotutelle <input checked="" type="checkbox"/>
Title of the research activity
Real time monitoring and damage detection of bridges and large structures by means of dynamics, output-only, methods and data based damage identification tools.
Short description of the research activity
<p>The activity is part of the main research activities of the Dynamics and Identification Research Group (DIRG) who has heavily contributed to the diffusion of these mentioned techniques (DAMAS, Surveillance congresses and MSSP journal – special edition on Time Variant Systems sorting out in 2012-2013). The Group has a huge experience on bridge monitoring and has also developed a new Wi-Fi 750 channel acquisition system for this purposes, showing the huge amount of time saved adopting this technique.</p> <p>Some benchmarks and lab rigs to test the identification algorithms have been developed and a new one, for a suspended bridge / cable stayed bridge, must be implemented. This is fundamental to test and improve a new algorithm which has been developed to estimate the cable tension without any intrusive instrument.</p> <p>Some other algorithms would be also improved to face two typical problems which have been faced along the framework of the National Research Program coordinated by this Unit, i.e. the Bridge Vibration Diagnosis project (BriViDi - http://www.brividi.polito.it/); one is the non negligible non-linear behavior of Reinforced concrete beams, the other is the fundamental aspect of mass varying system, when vehicles are running over the bridge.</p>
Scientific responsible (name, surname, role)
Luigi Garibaldi – Full Professor, leading the DIRG Group – also coordinator of the PhD in Mechanics
Email: luigi.garibaldi@polito.it
Number of vacancies for XXVIII cycle (begin January 2013)
Up to three students (two full degree, one cotutelle)
Specific requirements (experiences, skills)
Dynamics, matlab, experience in signal processing and data acquisition
Website of the research group (if any)
http://www.dimec.polito.it/en/la_ricerca/gruppi/dinamica_dei_sistemi_meccanici_e_identificazione
http://www.brividi.polito.it/