

# Politecnico di Milano

## PhD in Information Technology

Research Area n. 3 - Title: Systems and Control

Research Title: Optimization and cooperative control of networked systems with applications

<b>Scholarships and Financial support</b>	
Monthly net income of PhD scholarship (max 36 months)	€ 1200,00 (In case of a change of the welfare rates during the three-year period, the amount could be slightly modified)
Number of scholarships	1
Beginning of PhD	1/5/2015
Deadline for application	10/3/2015
<b>Context of the research activity</b>	
Motivations and objectives of the research in this field	The study of challenging cooperative control techniques for energy/time optimization in rail networks <ul style="list-style-type: none"><li>• Cooperative control</li><li>• Consensus on networks</li><li>• Measurement and data transmission</li><li>• Modelling of electromechanical systems</li><li>• Optimization algorithm</li></ul> Specific objectives are: analysis of different railway topologies, new techniques for the minimization of average energy losses, evaluation of mixed performances.
Methods and techniques that will be developed and used to carry out the research	The research is carried out within a group under the guidance of a supervisor. Higher level courses are offered that foster an interdisciplinary approach to the research. Development of advanced models as well as

	laboratory activity are usually part of the workplan
Educational objectives	The doctoral program offers advanced training in the research topics currently explored by the scientific community in academy and industry. A period of study in worldwide most recognized research institutions is supported by the doctoral school and the supervisor.  <a href="http://phd.dei.polimi.it">http://phd.dei.polimi.it</a>
Job opportunities	The PhD graduates have opportunities both in academy and industry. The intensive collaboration with industrial partners allowed several past PhD graduates to find a satisfactory job position in private companies. Job opportunities abroad are also frequently offered.
Composition of the research group	Number of Full Professors: 17 Number of Associated Professors: 5 Number of Assistant Professors: 18 Number of PhD students and Post-docs: 50 <a href="http://www.deib.polimi.it/ricerca/sezioni/index.php?&amp;id_sezione=1&amp;idlang=eng">http://www.deib.polimi.it/ricerca/sezioni/index.php?&amp;id_sezione=1&amp;idlang=eng</a> (select Systems and Control)
Names of the research directors	Prof. Patrizio Colaneri
E-mail address, phone number and web-page	E-mail: <a href="mailto:colaneri@polimi.it">colaneri@polimi.it</a> , Phone: +39 02.2399.3656 <a href="http://home.dei.polimi.it/colaneri/index.html">http://home.dei.polimi.it/colaneri/index.html</a>
List of Universities, Companies, Agencies and/or National or International Institutions that are cooperating in the research	1. Alstom (reference company) 2. Hamilton Institute, Maynooth 3. Johann Kepler University, Linz (Austria)
<b>Additional support</b>	
<u>Housing:</u> financial aid per PhD student per year (gross amount)	
<u>Funding for educational activities</u> (purchase of study books and material, funding for participation in courses, summer schools, workshops and conferences): funding per PhD student per year	2 <sup>nd</sup> year: € 1370 3 <sup>rd</sup> year: € 1370
<u>Teaching assistantship:</u> availability of funding in recognition of support to teaching activities by the PhD student	There are various forms of financial aid for activities of support to the teaching practice. The PhD student is encouraged to take part in these activities, within the limits allowed by the regulations.
<u>Computer availability:</u>	1 <sup>st</sup> year: individual use 2 <sup>nd</sup> year: individual use 3 <sup>rd</sup> year: individual use
<u>Desk availability:</u>	1 <sup>st</sup> year: individual use 2 <sup>nd</sup> year: individual use 3 <sup>rd</sup> year: individual use