



# POLITECNICO DI TORINO

## Department of Electronics and Telecommunications

Turin, 15 June 2020

### OPEN POSITION:

#### Graduate or Post-Doc position on Integration of Lasers in Silicon Photonic Platform

##### Research project:

##### *Design of efficient and tolerant to optical feedback DFB lasers for integration in Silicon Photonics Platform*

One Post-graduate or Post-doc position is available in the framework of a Sponsored Research Agreement funded by CISCO Systems US (world leader company in the field of optical communications and information technology).

The project is carried on at Department of Electronics and Telecommunications (DET) of Politecnico di Torino (Italy) under the coordination of Prof. Mariangela Gioannini and supervision of Dr. Lorenzo Columbo.

The candidate will work at the DET in the Microwave and Opto-Electronics research group ([http://www.det.polito.it/research/research\\_groups/electronics/microwave\\_and\\_opto\\_electronics](http://www.det.polito.it/research/research_groups/electronics/microwave_and_opto_electronics)) active since many years in the field of high-frequency electronics, optoelectronics integrated optics and semiconductor lasers for a number of ground-breaking applications, well recognized in the scientific community and involved in several projects in collaboration with research institutes or companies.

##### Description

One post-doc research fellowship (Assegno di Ricerca Italian post-doc contract) for one year and possible extension to a second year. Net salary depends on the post-doc experience and the CV of the candidate (minimum net salary is 1700 euro/month).

One graduate student research contract of one year (Assegno di Ricerca Italian graduate contract) for a graduate student (with Master Degree or Laurea Magistrale). The net salary is about 1500 euro/month. Possible extension to a 3 years PhD program.

##### Research Activity

The research work will focus on the modelling and design of a novel hybrid configuration to stabilize, against optical feedback, DFB lasers integrated in a silicon photonic platform. This is currently a hot topic since it covers the issue of isolator free lasers integrable at low cost in the CMOS compatible process.



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The research will be developed in strict collaboration with CISCO Systems US. The candidate will have the possibility to test theoretical results on prototype devices as well as to take part to new design tapeout.

The activity will cover:

- ✚ The identification and the development of the physical model for DFB dynamics in hybrid configurations in presence of optical feedback
- ✚ The development of algorithms for the numerical integration of the system dynamics and the determination of its the steady-state performances
- ✚ The execution and analysis of systematic simulations aimed at both validate the analytical model predictions and studying the complex system spatio-temporal behaviour on advanced computer clusters.
- ✚ Design of new devices

**Start:** Candidate should be enrolled in September or October 2020.

Based on COVID-19 restrictions, it will be possible working from home with on-line connections to the computer servers provided by the Politecnico di Torino.

### Candidate's requested qualification

- **For post-doc position:** PhD Degree in Electronic Engineering (specialisation in photonic devices) or in Physics or in Photonics or in related areas.
- **For graduate position:** Master Degree or Laurea Magistrale in Electronic Engineering (specialisation in Optoelectronics or Photonics) or in Physics or in Photonics or in related areas.
- Experience (measured respect to the degree) in modelling and numerical simulation of semiconductor photonic devices and preferably on semiconductor lasers.
- Interest in studying laser dynamics and in particular laser behavior in presence of optical feedback.
- Attitude to team work, interest for development of design and application oriented research, attitude to interact with experimental researchers in an international team of a world class industrial partner as CISCO.

Selection will be done on the basis of an assessment (Concorso per Assegno di Ricerca), based on the evaluation of the candidate scientific CV and on a personal interview.

### If interested send your CV and a presentation letter to

Prof. Mariangela Gioannini ([mariangela.gioannini@polito.it](mailto:mariangela.gioannini@polito.it), mobile +39 3398592880)  
Dr. Lorenzo Luigi Columbo ([lorenzo.columbo@polito.it](mailto:lorenzo.columbo@polito.it), mobile. +39 3280151596)

**Application deadline: 31 July 2020**