Mercoledì **3 Aprile 2024** alle ore **15.00** presso l'aula F

il **Dr. Luca Picelli**

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terrà il seminario dal titolo:

Optical sensing with photonic (nano-)structures

Abstact: Photonic structures allow the manipulation of light and its interaction with matter in different ways than classical optics. In particular, photonic nano-structures represent an important turning point for the development of future technologies. Here we present two different applications of photonic structures for sensing. First, we investigate the integration of photonic crystals on optical fiber facets in the context of "Lab-on-Fiber" technology. The application of such fiber-tip devices ranges from temperature to refractive index sensing which is strictly correlated with concentration in simple binary solutions. The photonics crystal can also be combined with a semiconductor p-i-n junction to realize a hybrid electronic-photonic sensor which is fully optically driven and interrogated by exploiting the properties of III-IV semiconductors and these optical nanostructures. Second, we show an integrated near-infrared spectral sensor based on an array of resonant-cavity-enhanced photodetectors. Each cavity is tuned to a different wavelength in the near-infrared spectral range, allowing for combined wavelength discrimination and light detection on a single chip. This small device combined with machine learning algorithms can be used for quantitative or qualitative analysis of chemical species in simple or complex matrices.

La presenza della S. V. sarà molto gradita

Prof. Christian Durante

Il Direttore del Dipartimento
Prof. Stefano Mammi