

# Soutenance de thèse

**Vendredi 08 septembre**

14 heures

salle INSP 22- 23 317 – C2N site Marcoussis

**Valerio PASQUALI**

**"Fabrication and characterisation of strain-free GaAs/AlAs quantum dot devices"**

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Rapporteur	Chantal FONTAINE (LAAS, Toulouse, France)
Rapporteur	Ian FARRER (University of Sheffield, UK)
Examineur	Gwendal FÈVE (LPA, Paris, France)
Examineur	Isabelle SAGNES (C2N, Marcoussis, France)
Directeur de thèse	Massimiliano MARANGOLO (INSP, Paris, France)
Membre invité	Paola ATKINSON (INSP, Paris, France)
Membre invité	Masaya KATAOKA (NPL, Teddington, UK)

## Abstract:

In this talk, I present the fabrication by molecular beam epitaxy of strain-free GaAs/AlGaAs quantum dots (QDs) by infilling in-situ etched nanoholes. After describing the process, I discuss how this QDs have been embedded in a two-dimensional electron gas (2DEG) heterostructure. The effect of the QDs on the 2DEG mobility will be discussed by comparing the magneto-transport measurements of the QD-2DEG sample with reference samples without QDs grown with similar conditions. Finally, I show the fabrication and characterisation of a lateral p-n junction with embedded QDs by locally inverting the n-type dopant (Silicon) with a p-type dopant (Zn). In particular, I will show the main result of this project, which is the electroluminescence of a single dot in proximity of the lateral p-n junction.