Labex MATISSE

Axe 4: Dimensionality and confinement

« Fabrication of an acoustically driven single-photon source »

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Hosting Laboratories :
Institut des NanoSciences de Paris (INSP)
Institut de Minéralogie, de Physique des Matériaux et de Cosmochimie (IMPMC)

Hosting laboratories, teams and and thesis supervisors names:

INSP, teams: Growth and properties of hybrid thin-film systems, Acoustics for nanosciences
IMPMC, team: Design and study of new materials with remarkable properties
Thesis Supervisors: Max Marangolo and Paola Atkinson (INSP)

Research project

The aim of this project is to develop a high frequency spin-sensitive single-photon source which would be suitable both for quantum cryptography applications and also for solid-state quantum computation.

Scientific results & impact

The first 6 months of the project have focussed on the technological development of the device, and learning some of the necessary skills for the project : photolithography and cleanroom processing, low temperature photoluminescence and magneto transport measurements. So far Hall bars on two-dimensional electron gases have been processed and measured. The hétérostructure design is still under optimisation. The development of the local p-type doping is still ongoing