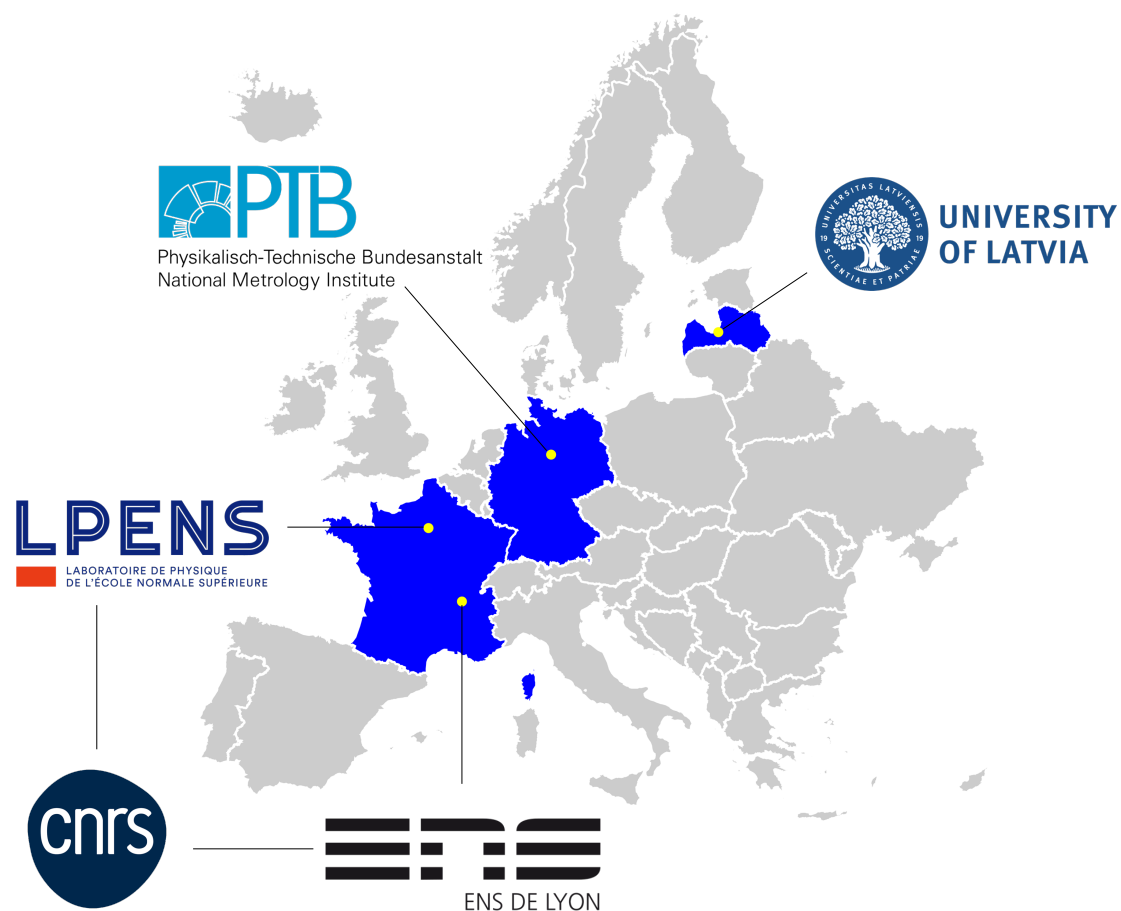


# ELQURES project

## Electronic Quantum Resources

### Reserch Team



- ❖ Univesity of Lativa, Riga, LV  
**Vyacheslavs Kashcheyvs (coordinator)**  
**Martins Kokainis**



- ❖ Physikalisch-Technische Bundesanstalt (PTB), Braunschweig, DE  
**Niels Ubbelohde**

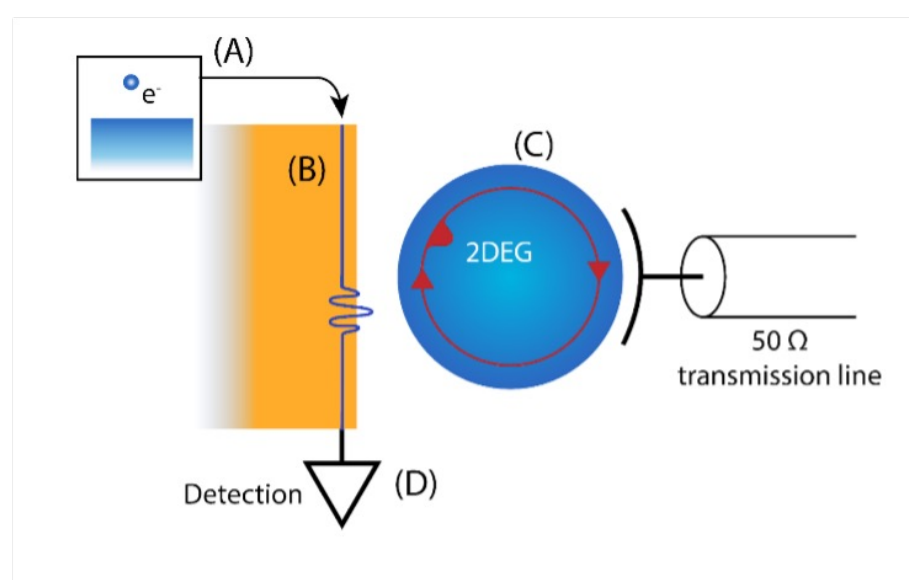


- ❖ École normale supérieure de Lyon, FR  
**Pascal Degiovanni**



- ❖ Laboratoire de Physique de l'ENS, Paris, FR  
**Gerbold Ménard**  
**Gwendal Fève**

Design, implement and explore novel types of non-classical states in semiconductor nanoelectronic circuits



Key circuit elements addressed in the project:  
 A **single-electron wave packet** properly shaped by the source (A) is injected in an electronic channel (B) where it interacts with an **edge-magnetoplasmon resonator** (C) before being **detected** (D).  
 Non-classical EM states are stored in the resonator or/and emitted into the transmission line.

Development of a unified framework for quantum tomography of electrical currents (B) using different detection techniques (D)

Demonstration of edge magnetoplasmon resonator technology (C) and of a coherent source of on-demand picosecond-scale wave packets (A)

Establishing the quantum speed limits for generation and detection of picosecond scale on-chip semiconductor electronic signals (A, B, D) and the Electronic-Preparation-Interaction-Detection scheme for non-classical EM states (A-D)