

# Seminario



### Dott.ssa Alma Beatrice Sergi

## **DLR German Aereospace Center**

# Diamond research at DLR Institute of Quantum Technologies

# Mercoledì, 2 ottobre 2024, h. 14.00

### Aula A, Dipartimento di Fisica, via Pietro Giuria 1, Torino

#### Abstract:

Here will be given an overview of the work conducted by the Diamond research group at DLR (German Aerospace Agency) institute of quantum technologies in Ulm, department of Integration of Micro- and Nanosystems (IMN).

The central focus of the group is the investigation of shallow (<10 nm from the surface) NV centres in diamond for quantum computing and quantum sensing applications in collaboration with University and industry partners. The objective is to enhance colour centres coherence times by manipulating surface roughness, homogeneity, and termination.

The performed fabrication and characterization processes are possible thanks to the cleanroom of University Ulm facilities that enable high-precision fabrication and characterization. Their stateof-the-art will be discuss as well as the processes we can develop. There will be a particular focus on photolithography processes for the fabrication of marker structures and hard masks on diamond chips.

In conclusion, availability for further collaborations, student's thesis and host researchers will be discussed.



#### <u>Bio</u>:

#### Alma Beatrice Sergi

Bachelor and master in Physics at Turin University, master curriculum *tecnologie avanzate*. The master thesis was done in collaboration with the microanalysis of materials research centre in Madrid and focused on diamonds controlled modification via high energy ions irradiation for biosensing and optical applications.

Currently working as a researcher in the diamond group of the German aerospace agency (DLR) in the institute of quantum technologies in Ulm. The main tasks include diamond surface characterization and structuring. In particular, surface roughness analysis; photolithography and samples manufacturing in the cleanroom.