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STMicroelectronics

**MEMS: Inertial Sensor devices**  
**Qualification and Industrialization challenges**

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## Abstract

MEMS stands for Micro-Electro-Mechanical System. They are miniaturized devices that integrate mechanical and electronic components onto a silicon substrate. The development of MEMS was made possible by developing microfabrication technique coming from semiconductor industry. Small dimension, low cost, high precision and accuracy allow MEMS pervasion into our life. After a brief introduction on MEMES inertial sensors working principles, a deep dive on qualification and industrialization challenges that we face during our daily activities will be presented. Industrial approach vs the academic one will be also highlighted. On top of that some example of fruitful collaborations between STMicroelectronics and University will be illustrated.

## The speakers



**Alessandro Balzelli Ludovico** graduated in Electronic Engineering at Politecnico di Milano with a thesis on mechanical properties of nanostructured materials. He started his career at STMicroelectronics focusing on silicon integrated waveguides. After several years he had the opportunity to join MEMS group as mechanical inertial sensor designer. He held different roles during the pioneering period of MEMS development (from purely R&D activities to mass production) before joining the Quality and Reliability department. Today he is in charge of new products Qualification and Industrialization. Author of several patents on micromachined sensors. Relevant publications: “sensors technology and devices, L.Ristic”, “Silicon Sensor and Actuators, Springer”.



**Matteo Manzotti** graduated in Materials and Nanotechnology Engineering at Politecnico di Milano in 2020, with a thesis on modeling the non-linear mechanical behavior of piezoelectrically actuated micro-mirrors. He started his career at STMicroelectronics in the MEMS Reliability Team, focusing on the reliability of piezo micro-mirrors. He authored a paper on piezo micro mirror drift modeling presented at ESREF 2023. Since 2023, he joined the Motion MEMS industrialization Team, focusing on quality aspects related to the ramp-up stage of new products introduction.