

## Quantum Technologies within INFN: status and perspectives



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### Optical quantum metrology sensing & imaging

In the last years the specific properties of quantum states (as entanglement), for long time considered as peculiarities discussed by the restricted community of physicists interested in the foundations of quantum mechanics, became a fundamental resource for the development of new technologies (as quantum communication, computation and imaging), collectively dubbed “quantum technologies”.

In this talk, after a generic introduction, I will introduce in details the new possibilities in imaging and sensing offered by quantum measurements in optical domain. In particular I will discuss the opportunities provided by photon number correlated states: quantum imaging & sensing based on photon correlated states (as ghost and sub shot noise imaging, quantum illumination, ...), quantum enhanced correlation interferometry (with particular concern to quantum improvements of the holometer, addressed to search for quantum gravity effects), ...

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