

## Quantum Technologies within INFN: status and perspectives



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### Quasi-Instantaneous online trigger based on optical neural network

The trend in particle physics experiment is to move the off-line analysis to real-time analysis and even to first-level trigger. The most powerful approach would be an hardware implement of machine learning techniques. Nowadays, this goal is limited by the computing power, power consumption and processing speed of traditional computing elements.

A novel approach is to use a neural network based on highly-nonlinear optical nodes to implement in real-time the necessary first-level trigger algorithms. Here we propose to develop an hardware implementation of machine learning techniques for nuclear physics experiments based on a lattices of exciton-polariton condensates which already proved to be able to out perform any previous hardware implementation.

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