

## Séminaire LAL

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**vendredi 26 janvier 2018 à 11h00**

### *Classification with Quantum Annealing on the D-Wave System*

We investigate the application of quantum and classical annealing in solving a Higgs signal versus background optimization problem. We bag a set of weak classifiers built based on the physical kinematic observables of the Higgs decay photons into a strong classifier. The resulting quantum and classical annealing-trained classifier systems perform comparably to the current state of the art machine learning methods used in particle physics. The annealer-trained classifiers can also easily exploit the excited states in the vicinity of the ground state and demonstrate some advantage over state of the art methods for small training sizes. We address the experimental setup, calibration considerations, and formalism of quantum annealing. We explain the dataset and setup of the classification problem, then present the result and comparison to other methods. We discuss possible further applications of D-Wave.

**Salle 101** - Bât. 200, Orsay

*Thé et café seront servis 15 mn avant le séminaire*  
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