Contribution ID: **1** Type: **Invited Speaker / Conférencier invité**

Belle-II: searching for new physics in the heavy flavor sector

Monday 16 June 2014 16:15 (30 minutes)

Belle-II will probe the flavour sector of particle physics at the high-luminosity SuperKEKB e+e- collider, located at the KEK laboratory in Japan. Physics operations will start in late 2016, with the goal of collecting by 2022 thirty times the combined integrated luminosity of the two previous generation B-factories, PEP-II at SLAC and KEKB at KEK. This precision-frontier facility will open an exciting window on new energy scales beyond the reach of existing colliders, including the LHC, by virtue of quantum loop corrections that are sensitive to massive, and as yet undiscovered, particles. These hypothesized particles manifest themselves in precision measurements of processes involving bottom and charm quarks and tau leptons, such as CP violation and other asymmetries, rare decays, and processes that are forbidden within our current understanding of physics. This program is complementary to direct searches for new physics at the LHC.

The Canadian group is working on an upgrade of the electromagnetic calorimeter that will enable it to achieve excellent efficiency and resolution in the presence of very high luminosity-related backgrounds. It will use pure CsI crystals with fine mesh photomultiplier tubes and custom analog and digital electronics, which are being designed by the Canadian group. We are aiming for installation in summer 2018.

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Session Classification: (M2-9) Status and Future of Precision Frontier - PPD-DIMP / État et avenir de la frontière de précision -PPD-DPIM

Track Classification: Particle Physics / Physique des particules (PPD)