



SPEAKER: Alain Bellerive (Canada Research Chair, Carleton University)

TITLE: **The Final Results from the Sudbury Neutrino Observatory**

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ABSTRACT

The Sudbury Neutrino Observatory (SNO) was a water Cherenkov detector dedicated to investigate elementary particles called neutrinos. It successfully took data between 1999 and 2006. The detector was unique in its use of heavy water as a detection medium, permitting it to make a solar model-independent test of solar neutrino mixing. In fact, SNO conclusively showed that solar neutrinos oscillate on their way from the core of the Sun to the Earth. This groundbreaking observation was made during three independent phases of the experiment. Even if data taking ended, SNO is still in a mode of precise determination of the solar neutrino oscillation parameters because all along SNO had developed several methods to tell charged-current events apart from neutral-current events. This ability is crucial for the final and ultimate data analysis of all the phases. The physics reach of a combined three-phase solar analysis will be reviewed together with results and subtleties about solar neutrino physics.