



Monday 4 July, 09:40 – 10:10

Session 1: Welcome and introduction

The Sudbury Neutrino Observatory: Observation of flavor change for solar neutrinos

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The Sudbury Neutrino Observatory (SNO) was a 1,000 tonne heavy-water-based neutrino detector created 2 km underground in an active nickel mine near Sudbury, Canada. SNO has studied neutrinos from ^8B decay in the Sun and observed one neutrino reaction sensitive only to solar electron neutrinos and others sensitive to all active neutrino flavors. It found clear evidence for neutrino flavor change that also implies that neutrinos have non-zero mass. This requires modification of the Standard Model for Elementary Particles and confirms solar model calculations with great accuracy. Future measurements at the expanded SNOLAB facility will search for Dark Matter particles thought to make up 26% of our Universe and neutrino-less double beta decay, a rare form of radioactivity that can tell us further fundamental properties of neutrinos.