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Recent Solar Neutrino Results and Future Prospects

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The original solar neutrino problem was solved when measurements were made by the Sudbury Neutrino Observatory that revealed that the flux of solar electron neutrinos was lower than the flux of solar neutrinos of all flavors. This demonstrated that neutrino flavor mixing, consistent with matter-enhanced neutrino oscillations, takes place. Though SNO has completed collecting data there is still much that can be learned from solar neutrinos, particularly at lower energies. Recent results from the Borexino experiment are the measured rate of ^{7}Be solar neutrinos and lower energy ^{8}B solar neutrinos. The most recent data analysis by SNO has also lowered the threshold for the detection of ^{8}B solar neutrinos using charged-current reactions of neutrinos on deuterium. Future measurements of the pep and CNO solar neutrinos are a goal of the SNO+ experiment. By looking at lower energy solar neutrinos, precision studies of neutrino oscillations can be continued. The original intent of solar neutrino experiments – using neutrinos to study solar physics – will also be revisited by future experiments. Neutrinos will help in understanding the metallicity in the solar core that appears to clash with recent interpretations of solar surface chemical abundances. This talk will present recent solar neutrino results and future prospects.