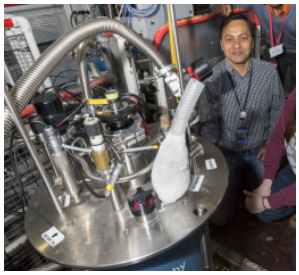

Contribution ID: **10** Type: **not specified**

Intrinsic magnetism in superconducting infinite-layer nickelates

Monday, 11 September 2023 12:20 (20 minutes)

The discovery of superconductivity in Nd0.8Sr0.2NiO2 introduced a new family of layered nickelate superconductors that has now been extended to include a range of strontium doping, praseodymium or lanthanum in place of neodymium. A number of studies have indicated that electron correlations are strong in these materials, a feature that often leads to the emergence of magnetism. Here we report muon spin rotation/relaxation studies of a series of superconducting infinite-layer nickelates. Regardless of the rare earth ion or doping, we observe an intrinsic magnetic ground state arising from local moments on the nickel sublattice. The coexistence of magnetism—which is likely to be antiferromagnetic and short-range ordered—with superconductivity is reminiscent of some iron pnictides and heavy fermion compounds, and qualitatively distinct from the doped cuprates.

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Session Classification: Supeconductivity I

Track Classification: Superconductivity I