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Superstructure and Magnetism in Na_{0.825}CoO₂ - A NMR study

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We report our NMR study of the Na ordering and magnetism in the single crystal of Na_{0.825}CoO₂, as follows. 1. The atomic order of Na is observed from the well-resolved ²³Na NMR peaks, which suggests 6 Na inequivalent sites. The ⁵⁹Co NMR also suggests 4 distinct Co sites due to Na ordering. 2. The magnetic field-induced transition from antiferromagnet to ferromagnet is verified by our ²³Na spectra at different temperatures and fields. A slow spin dynamic of glassy-like behavior is observed near the AFM and FM boundary. 3. We observed the NMR frequency shift anomaly near 50K, the same temperature where the susceptibility shows the curvature. The anomaly suggests the onset of the magnetic correlation in prior to magnetic ordering.

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