

Abstract Submitted
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Magnetic Spectra on Charge Ordering in $R_{1/3}\text{Sr}_{2/3}\text{FeO}_{3-\sigma}$ ($R = \text{La, Pr, and Nd}$) JIE MA, JIAQIANG YAN, SOULEYMANE OMAR DIALLO, REBECCA STEVENS, ANNA LLOBET, FRANS TROUW, DOUGLAS ABERNATHY, MATTHEW STONE, ROBERT MCQUEENEY, AMES LABORATORY, AMES, IA 50011 COLLABORATION, DEPARTMENT OF PHYSICS AND ASTRONOMY, IOWA STATE UNIVERSITY, AMES, IA 50011 COLLABORATION, OAK RIDGE NATIONAL LABORATORY, PO BOX 2008, OAK RIDGE, TN 37831, USA COLLABORATION, LOS ALAMOS NATIONAL LABORATORY, LOS ALAMOS, NM 87545 COLLABORATION — $R_{1/3}\text{Sr}_{2/3}\text{FeO}_{3-\sigma}$ ($R = \text{La, Pr, and Nd}$) compounds are reported to have the same charge ordering (CO) and Neel temperatures. Inelastic neutron scattering is applied to study the magnetic energy effect on the CO state in this system. Based on the ratio of the ferromagnetic exchange energy (J_F) and antiferromagnetic exchange energy ($|J_{AF}|$), the magnetic exchange energy can stabilize the CO state in $\text{La}_{1/3}\text{Sr}_{2/3}\text{FeO}_{3-\sigma}$ and $\text{Pr}_{1/3}\text{Sr}_{2/3}\text{FeO}_{3-\sigma}$ alone; with the smaller R^{3+} substitution, $|J_{AF}|$ increases a lot from $\text{La}_{1/3}\text{Sr}_{2/3}\text{FeO}_{3-\sigma}$ to $\text{Nd}_{1/3}\text{Sr}_{2/3}\text{FeO}_{3-\sigma}$, but the CO of Fe ions could still be driven by magnetic energy itself with the correction on magnetic energy ratio.

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