Abstract Submitted
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Spin Pseudogap in Ni-Doped $SrCuO_2$ GEDIMINAS SIMUTIS, MARTIN MANSSON, SEVERIAN GVASALIYA, NSM group, ETH Zurich, Switzerland, ALEXANDER CHERNYSHEV, University of California, Irvine, USA, ASHWIN MOHAN, SURJEET SINGH, CHRISTIAN HESS, BERND BÜCHNER, IFW Dresden, Germany, ANDREI SAVICI, ALEXANDER KOLESNIKOV, ORNL, Oak Ridge, USA, ANDREA PIOVANO, ILL, Grenoble, France, TOBY PERRING, ISIS, Ditkot, UK, IGOR ZALIZNYAK, BNL, Upton, USA, ANDREY ZHELUDEV, NSM group, ETH Zurich, Switzerland — Effect of spin-1 impurities on the spectrum of an archetypical Heisenberg antiferromagnetic spin-$\frac{1}{2}$ chain $SrCuO_2$ is studied by inelastic neutron scattering [1]. We find that a spin pseudogap appears in the spectrum upon introduction of the impurities. We show that the pseudogap is a generic feature of quantum spin chains with dilute defects. This allows us to express the dynamic structure factor in a universal scaling form even for the system with fragmented chains. A simple model based on chain fragmentation shows good quantitative agreement with the experimental data for a broad temperature range.

[1] Simutis et al, PRL 111, 067204 (2013)

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