

Abstract Submitted
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Iron isotope effect on the superconducting transition temperature and the crystal structure of FeSe_{1-x} MARKUS BENDELE, Physik-Institut der Universität Zürich, RUSTEM KHASANOV, KAZIMIERZ CONDER, EKATERINA POMJAKUSHINA, VLADIMIR POMJAKUSHIN, Paul Scherrer Institute, ANNETTE BUSSMANN-HOLDER, Max-Planck-Institut für Festkörperforschung, HUGO KELLER, Physik-Institut der Universität Zürich — The Fe isotope effect (Fe-IE) on the transition temperature T_c and the crystal structure was studied in the Fe chalcogenide superconductor FeSe_{1-x} by means of magnetization and neutron powder diffraction (NPD). The substitution of natural Fe (containing $\simeq 92\%$ of ^{56}Fe) by its lighter ^{54}Fe isotope leads to a shift in T_c of $0.22(5)$ K corresponding to an Fe-IE exponent of $\alpha_{\text{Fe}} = 0.81(15)$. Simultaneously, a small structural change with isotope substitution is observed by NPD. This may help to clarify the currently controversial results of the Fe-IE. Upon correcting the isotope effect exponent for these structural effects, an almost unique value of $\alpha \sim 0.35 - 0.4$ is observed for at least three different families of Fe-based HTS.

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