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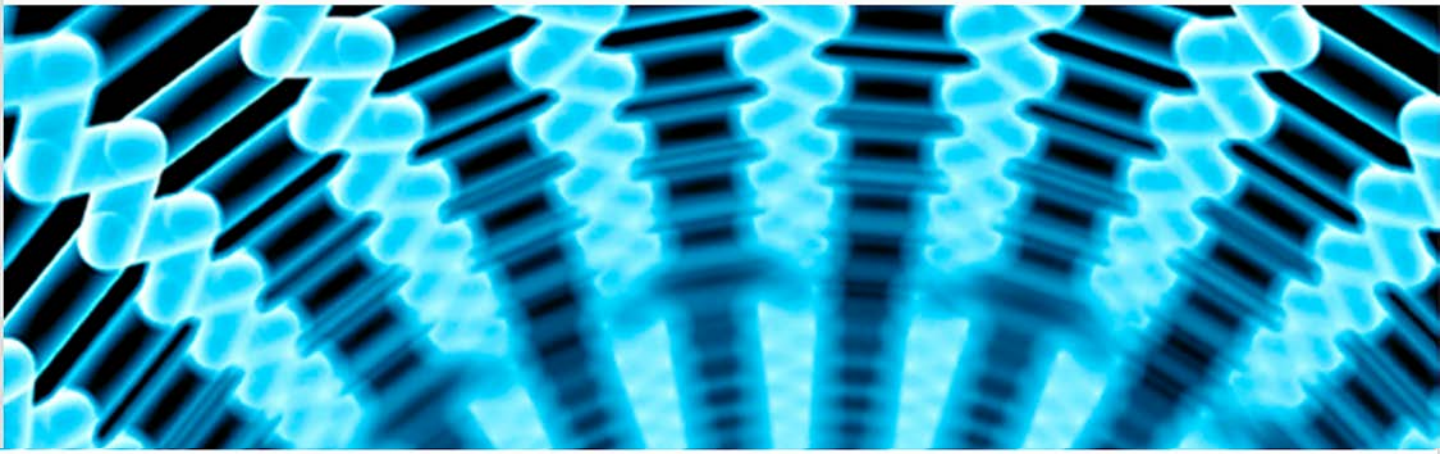

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Using controlled disorder to probe the interplay between charge order and superconductivity in $NbSe_2$

Kyuil Cho, M. Kończykowski, S. Teknowijoyo, M. A. Tanatar, J. Guss, P. B. Gartin, J. M. Wilde, A. Kreyssig, R. J. McQueeney, A. I. Goldman, V. Mishra, P. J. Hirschfeld & R. Prozorov ✉

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The interplay between superconductivity and charge density wave (CDW) in 2*H*-$NbSe_2$ is still not fully understood. Here, Cho et al. use controlled disorder to probe the interplay between these two phases in 2*H*-$NbSe_2$ and find that superconductivity initially… show more

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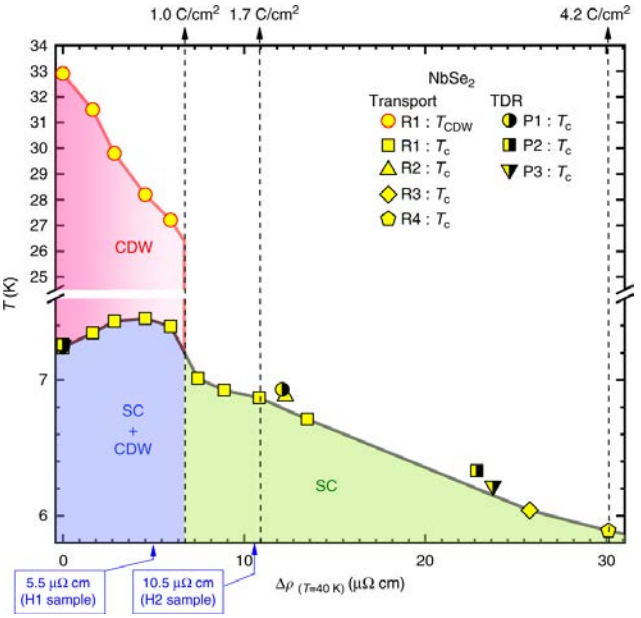

Temperature versus $\Delta\rho_{(T=40K)}$ phase diagram upon electron irradiation. For low doses of irradiation up to 1.0 C cm^{-2}, T_c varies non-monotonically, whereas T_{CDW} monotonically decreases. When the resistivity feature of CDW disappears around 1.0 C cm^{-2} (shown in Fig. 2(b,d)), T_c suddenly drops by 0.3 K, indicating strong correlation between SC and CDW phases. Upon further irradiation, T_c monotonically decreases. The full phase diagram up to the highest dose of 8.93 C cm^{-2} is shown in Supplementary Figure 1. Hall resistivity is measured in two samples H1 and H2 (Fig. 6(a,b)). Two blue arrows in x-axis indicate their locations in the phase diagram, based on the increase in resistivity (Fig. 6(c,d))

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