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New magnetic neutron scattering results for the high- T_c superconductors $\text{HgBa}_2\text{CuO}_{4+\delta}$ and $\text{Nd}_{2-x}\text{Ce}_x\text{CuO}_{4+\delta}$
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We have succeeded in growing sizable single crystals of $\text{HgBa}_2\text{CuO}_{4+\delta}$, the single-layer hole-doped compound with the highest superconducting transition temperature [1]. Careful characterization demonstrates the high quality of our crystals [2]. Using polarized neutron diffraction, we find an unusual magnetic order in the pseudogap phase [3]. Together with prior results for $\text{YBa}_2\text{Cu}_3\text{O}_{6+\delta}$, this observation constitutes a demonstration of the universal existence of such a state. Our inelastic neutron scattering measurements reveal that the antiferromagnetic resonance occurs at a rather high energy in $\text{HgBa}_2\text{CuO}_{4+\delta}$ and, hence, that the resonance energy is not universally related to T_c [4]. Finally, our results for the antiferromagnetic excitations in $\text{Nd}_{2-x}\text{Ce}_x\text{CuO}_{4+\delta}$ provide new insight into magnetic energy scales and the resonance of the electron-doped side of the phase diagram [5].

[1] X. Zhao et al., *Adv. Mater.* **18**, 3243 (2006).

[2] N. Barisic et al., *Phys. Rev. B* **78**, 054518 (2008).

[3] Y. Li et al., *Nature* **455**, 372 (2008).

[4] G. Yu et al., arXiv:0810.5759.

[5] G. Yu et al., arXiv:0803.3250.