

Abstract Submitted  
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**Magnetic fluctuations under the superconducting dome of  $\text{Ba}(\text{Fe}_{1-x}\text{Co}_x)_2\text{As}_2$  from flux-flow resistivity**<sup>1</sup> XINYI HUANG, DEREK HANEY, YOGESH SINGH, SHUAI ZHANG, Kent State University, HAI-HU WEN, Nanjing University, TAO HU, Shanghai Institute of Microsystem and Information Technology, CAS, MAXIM DZERO, CARMEN ALMASAN, Kent State University — We investigate the magnetism inside the superconducting phase of  $\text{Ba}(\text{Fe}_{1-x}\text{Co}_x)_2\text{As}_2$  crystals (on both sides of the optimal doping) by inducing superconducting vortices via applied field and performing current-voltage measurements. This allows us to measure the quasiparticle scattering within the normal cores, despite being inside the superconducting dome. Analysis of the free-flux-flow resistivity within the superconducting phase shows a sharp increase in the quasiparticle scattering with decreasing temperature and applied field, which we attribute to the presence of critical spin fluctuations inside the vortex core. The fluctuations are strongest in the doping with the highest critical temperature, and the behavior is suppressed as the material is more underdoped. For each doping measured, at different temperatures and applied fields, the vortex dissipation curves scale and show an exponential relationship. We will discuss the physics behind the exponential relationship for each doping range.

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