

Abstract Submitted
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Why superconducting vortices follow to moving hot spot?¹ AN-DREI SERGEEV, US Army Rsch Lab - Adelphi, REIZER MICHAEL, Chem Abst — Recent experiments reported in Nature Comm. 7, 12801, 2016 show that superconducting vortices follow to the moving hot spot created by a focused laser beam, i.e. vortices move from the cold area to the moving hot area. This behavior is opposite to the vortex motion observed in numerous measurements of the vortex Nernst effect, where vortices always move against the temperature gradient. Taking into account that superconducting magnetization currents do not transfer entropy, we analyze the balance of forces acting on a vortex in stationary and dynamic temperature gradients. We show that the dynamic measurements may be described by a single vortex approximation, while in stationary measurements interaction between vortices is critical.

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