Abstract Submitted
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Crtical Current by Design Through Large-scale Simulations[1] ANDREAS GLATZ, ALEX KOSHELEV, IVAN SADOVSKYY, GEORGE CRABTREE, Argonne National Laboratory — Understanding the dynamic behavior of vortex matter in complicated pinning landscapes is a major challenge for both fundamental science and energy applications. In particular, optimizing type, size and density of pinning centers can significantly enhance the critical current. Based on the time-dependent Ginzburg-Landau equation, we developed a numerical approach towards finding these optimal pinning configurations. I will give an overview of this new paradigm, called Critical Current by Design.

References:

[1] I. A. Sadovskyy, A. E. Koshelev, C. L. Phillips, D. A. Karpeev, A. Glatz, J. of Comp. Phys. **294**, 639 (2015).

[2] A. E. Koshelev, I. A. Sadovskyy, C. L. Phillips, A. Glatz, arXiv:1509.04212 (2015).

[3] Ivan A. Sadovskyy, Ying Jia, Maxime Leroux, Jihwan Kwon, Hefei Hu, Lei Fang, Carlos Chaparro, Shaofei Zhu, Ulrich Welp, Jianmin Zuo, Venkat Selvamanickam, George W. Crabtree, Alexei E. Koshelev, Andreas Glatz, and Wai-Kwong Kwok, arXiv:1509.06446 (2015).

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