

Abstract Submitted
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Parallel Dipole Line System: A Novel Magnetic Trap and High Sensitivity Hall system OKI GUNAWAN, IBM T J Watson Research Center, Yorktown Heights NY 10598, YUDISTIRA VIRGUS, College of William & Mary, Williamsburg VA 23187, KONG FAI TAI, Division of Physics and Applied Physics, Nanyang Technological University, Singapore 637371 — A system that could trap cylindrical objects such as semiconductor nanowires provides a route towards self-assembled fabrication of bottom-up nanowire integrated circuit. We show that such a trap can be realized using a simple parallel dipole line (PDL) system which can be experimentally realized using diametrically-magnetized magnets with a diamagnetic rod as the trapped object. This system produces a fascinating 1D camelback potential profile at the center plane and yields a new technique for magnetic susceptibility measurement for the trapped rod. This system also yields a surprising application for a high sensitivity Hall measurement system which plays a decisive role in extracting low carrier mobility in earth abundant kesterite solar cell.

Oki Gunawan
IBM Research

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