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Magnetic oscillations of critical current in Josephson-junction stacks ALEXEI KOSHELEV, Argonne National Laboratory — We consider magnetic oscillations of critical current in stacks of Josephson junctions, which are realized in mesas fabricated from layered high-temperature superconductors. Depending on the stack lateral size and magnetic field, oscillations may have either period of half flux quantum per junction (large-size regime) or one flux quantum per junction (small-size regime). We study in detail the crossover between these two regimes. In the small-size regime the lattice structure experiences periodic series of phase transitions between aligned rectangular configuration and triangular configuration. Triangular configurations in this regime realize only in narrow regions near magnetic-field values corresponding to integer number of flux quanta per junction. This work was supported by the U. S. DOE, Office of Science, under contract # W-31-109-ENG-38.

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