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**Ground state of interlayer Josephson vortex systems: General description based on energy landscape** YOSHIHIKO NONOMURA, XIAO HU, Computational Materials Science Center, National Institute for Materials Science, Tsukuba, Ibaraki 305-0047, Japan — Although Josephson vortex systems have been intensively studied, their phase diagrams have not been established yet even in the ground state. In the present study, we draw the full energy landscape with respect to magnetic field and the displacement from aligned vortex lattices by neglecting the spatial variation in the amplitude of superconductivity order parameter and in the gauge field in the Lawrence-Doniach model. We find that the ground state changes continuously from the aligned lattice to sheared lattices, and then to rotated lattices as the magnetic field decreases, and that rotated lattices are characterized by multi-valley structures of the energy landscape. Owing to effects of the underlying layer structures, the rotated vortex lattices realized at the valleys of the energy landscape are distorted from the rigid ones expected from the picture based on the London model, and this distortion becomes weak as the magnetic field decreases. We would like to thank Dr. A. E. Koshelev for sending his article prior to publication.

Yoshihiko Nonomura  
Computational Materials Science Center,  
National Institute for Materials Science, Tsukuba, Ibaraki 305-0047, Japan

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