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**Controlling Majorana bound states in a Josephson junction on a topological insulator** SANG-JUN CHOI, H.-S. SIM, Korea Advanced Institute of Science and Technology, QUANTUM ELECTRON CORRELATION AND TRANSPORT LAB TEAM — We theoretically study a Josephson junction on a topological insulator under a magnetic field such that the number of flux quanta inside the Josephson junction is larger than one. Majorana bound states emerge along the junction where the superconducting phase difference of the junction equals to  $\pi$ . We find that the fermionic state composed of the Majorana bound states can be manipulated and controlled by a bias voltage between the two superconductors. The features of Majorana bound states such as exchange can be detected by measuring the Josephson current.

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