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Different roles of Zn^{2+} and Li^+ impurities in the CuO_2 plane in undoped cuprate compounds JIAWEI MEI, Institute for Theoretical Physics, ETH Zurich — A planar Mott insulator with easy plane Neel order can be mapped unto a Gutzwiller projected topological insulator model. Under the assumption that the projection operator can be permuted, Zn^{2+} and Li^+ impurities can be represented as vacancies introducing a zero mode, which has a local spin moment for Zn^{2+} and a charged hole for Li^+ , respectively. While the local spin moment for Zn^{2+} is screened by the long-range spin correlations, the active charge degree of freedom for Li^+ impurity twists the spin background. This proposal explains the very different roles of the Zn^{2+} and Li^+ impurities in the CuO_2 plane in the undoped cuprate compounds.

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