Geometric Model of Topological Insulators from the Maxwell Algebra[1] GIANDOMENICO PALUMBO, University of Utrecht — I propose a novel geometric model of time-reversal-invariant topological insulators in three dimensions in presence of an external electromagnetic field. Their gapped boundary supports relativistic quantum Hall states and is described by a Chern-Simons theory, where the gauge connection takes values in the Maxwell algebra. This represents a non-central extension of the Poincare' algebra and takes into account both the Lorentz and magnetic-translation symmetries of the surface states. In this way, I derive a relativistic version of the Wen-Zee term and I show that the non-minimal coupling between the background geometry and the electromagnetic field in the model is in agreement with the main properties of the relativistic quantum Hall states in the flat space.

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