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Computing the response functions of topological insulators with non-commutative geometry[1] EMIL PRODAN, Department of Physics, Yeshiva University, New York, NY 10016 — For periodic systems, the correlation functions take closed-form expression involving integrations and derivations of ordinary functions defined over the Brillouin torus (Bloch-Floquet calculus). The non-commutative geometry provides an analog of the Bloch-Floquet calculus for aperiodic systems under magnetic fields, and this formalism was used in the past to derive closed-form expressions for Kubo-formula, orbital electric and magnetic polarization and much more, for strongly disordered systems under magnetic fields. In this talk I will describe how these non-commutative formulas can be evaluated on a computer, enabling us to investigate the response coefficients of strongly disordered topological with unprecedented precision and efficiency.

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