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Ralph M Kaufmann, Sergei Khlebnikov and Erika Birgit Wehefritz-Kaufmann*
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and symmetries.*

We describe condensed matter systems in terms of non-commutative geometry. Their band structure can be analyzed in the classical limit in terms of quantum graph symmetries. This leads to interesting properties of the materials, such as those of exhibiting Dirac points and higher order level crossings, which can lead to Weyl semi-metals. (Received September 16, 2019)