

Ground state degeneracy and module category

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One of the goals in quantum field theory is to identify long distance behaviors of a theory defined at a short distance. One criterion to distinguish long distance behaviors is the presence of gap. When it is gapped, in two-dimensional space(time), the phases stand in bijection with module categories. In particular, ground state degeneracies (GSDs) of gapped phases are given by ranks of module categories. In this talk, we present a method to classify module categories. The results constrain (or fix) GSDs in gapped phases. Sometimes, it also implies symmetries in the problem should be spontaneously broken.

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