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Anomaly indicators for time-reversal symmetric topological orders CHENJIE WANG, Perimeter Institute for Theoretical Physics, MICHAEL LEVIN, University of Chicago — Some time-reversal symmetric topological orders are anomalous in that they cannot be realized in strictly two-dimensions without breaking time reversal symmetry; instead, they can only be realized on the surface of certain three-dimensional systems. We propose two quantities, which we call *anomaly indicators*, that can detect if a time-reversal symmetric topological order is anomalous in this sense. Both anomaly indicators are expressed in terms of the quantum dimensions, topological spins, and time-reversal properties of the anyons in the given topological order. The first indicator, η_2 , applies to bosonic systems while the second indicator, η_f , applies to fermionic systems in the DIII class. We conjecture that η_2 , together with a previously known indicator η_1 , can detect the two known Z_2 anomalies in the bosonic case, while η_f can detect the Z_{16} anomaly in the fermionic case.

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