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Invariant rigidity properties from eigenvalues of rotations and braids in spherical fusion categories.

Using the generalized categorical Frobenius-Schur indicators for semisimple spherical categories we have established formulas for the multiplicities of eigenvalues of generalized rotation operators. In particular, this implies for a finite depth planar algebra, the entire collection of rotation eigenvalues can be computed from the fusion rules and the traces of rotation at finitely many depths. If the category is also braided these formulas yield the multiplicities of eigenvalues for a large class of braids in the associated braid group representations. This provides the eigenvalue multiplicities for braids in terms of just the S and T matrices in the case where the category is modular. (Received February 07, 2017)