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FOUR DIMENSIONAL ASSOCIATION SCHEMES HAVE CYCLOTOMIC CHARACTER VALUES

In 1980, Simon P. Norton posed the Cyclotomic Eigenvalue Question (CEQ) which asks whether the entries of the character table of a commutative association scheme always lie in a cyclotomic number field. The adjacency algebras of association schemes are a special type of standard integral table algebras with integral multiplicites (SITAwIMs). Character formulas for complete graphs, strongly regular graphs, and doubly regular tournaments imply the CEQ is true in dimensions 2 and 3.

In this talk we will show that the values of irreducible characters of SITAwIMs of dimension up to 4 lie in cyclotomic number fields. We also give an example of a SITAwIM with noncyclotomic character values of dimension 5. This is joint work with Allen Herman.