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Topological insulators and real almost commuting matrices

We will discuss variations on Lin's theorem discovered jointly with Adam Sørensen. Two almost commuting real symmetric matrices are uniformly close to commuting real symmetric matrices. The same is true for self-adjoint, self-dual matrices, or equivalently for self-adjoint matrices over the quaternions. These represent partial results related to the many conjectures made with Matthew Hastings regarding real C^* -algebras and topological insulators.