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von Neumann algebras of dimension greater than one contain non-trivial projections

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- Let \mathcal{M} be a von Neumann algebra of dimension greater than one acting on an Hilbert space H . Then \mathcal{M} contains a non-trivial projection, i.e. a projection that is not the <http://planetmath.org/ZeroMapzero> the identity operator.

Note - As in the theory of C^* -algebras, for a projection we mean an orthogonal projection.