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A quantale model of cognition

This talk describes ongoing work motivated by the measurement problem in quantum mechanics and by philosophical considerations concerning the nature of consciousness. A link connecting these subjects was explicitly proposed for the first time by Von Neumann, and it is fair to say that, despite many repeated efforts to understand it or circumvent it in the foundations of quantum physics, there is a debate which has not been settled. I will provide a brief account of some of the issues involved and then will describe a toy model intended to describe mathematical properties of qualia, understood to be elementary qualities of conscious experience. Quantales with a rich collection of embedded locales arise naturally, examples of which are obtained from C^* -algebras, and I will examine some of their properties as well as implications for the subjects which this model purports to address.