

**Inequalities for noncommutative martingales with  
applications to quantum harmonic analysis**

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In the recent twenty years, the theory of noncommutative (or quantum) martingales has gained a lot interest in the literature, and most of the classical results has been successfully transferred to this new, operator context. The purpose of the talk is to survey some recent progress in this field and discuss several applications related to boundedness of Fourier multipliers on some group von Neumann algebras