K-theory for categorical groups

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Quillen defined the n-th algebraic K-group of a ring R as $\pi_n(BGL(R)^+)$. Using the notion of homotopy categorical groups of any pointed space, that are defined via the fundamental groupoid of iterated loop spaces, in this talk, we introduce the concept of K-categorical groups $\mathbb{K}_i R$ of any ring R. We also show the existence of a fundamental categorical crossed module associated to any fibre homotopy sequence. This fact, allows us to characterize $\mathbb{K}_1 R$ and $\mathbb{K}_2 R$, respectively, as the homotopy cokernel and kernel of the fundamental categorical crossed module associated to the fibre homotopy sequence $F(R) \xrightarrow{d_R} BGL(R) \xrightarrow{q_R} BGL(R)^+$.

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