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**Stefan Wagner\*** ([stefan.wagner@bth.se](mailto:stefan.wagner@bth.se)), Stefan Wagner, Valhallavägen 1, 37141 Karlskrona, Sweden. *Factor systems for noncommutative principal bundles and their applications.*

Free  $C^*$ -dynamical systems, in the sense of Ellwood, provide a natural framework for noncommutative principal bundles, which are becoming increasingly prevalent in various applications to noncommutative geometry and mathematical physics. One of the key features of free  $C^*$ -dynamical systems are their associated factor systems, which make them accessible to classification,  $K$ -theoretic considerations, and computations in general. In this talk we give a brief overview of the recent theory of factor systems for free  $C^*$ -dynamical systems and present some applications. (Received August 27, 2021)