

Title : Solution to Connes' embedding problem, after Ji-Natarajan-Vidick-Wright-Yuen

Abstract : In 1976 Alain Connes asked whether every von Neumann algebra with a trace can be approximated by matrix algebras, in a suitable weak sense. This problem gradually became one of the main open problems in operator algebras with multiple facets. Its solution using theoretical computer science methods was announced in early 2020 by Ji, Natarajan, Vidick, Wright and Yuen. In this survey talk, I will present a very rough idea of the proof how I understand it. I will try to stay far from the (immense) technicalities and explain the key insights, that will hopefully also be used, one day, to solve other problems of the same flavour such as the hyperlinearity and soficity problems for groups, the Aldous conjecture for unimodular random networks etc.