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Measures of Arens regularity and irregularity

The bidual of a Banach algebra is naturally equipped with two products, the left and right Arens products. The algebra is called Arens regular if these multiplications coincide, which is the case for all operator algebras. We shall present various ways in which one can measure the degree of Arens regularity and irregularity, considering mainly algebras associated with locally compact groups and quantum groups. This includes the affirmative solution to the Ghahramani-Lau conjecture (formulated in 1995) stating that the measure algebra of any locally compact group is strongly Arens irregular, in the sense of Dales-Lau; the latter is joint work with V. Losert, J. Pachl and J. Steprans.