

**Boundary theory and amenability: from Furstenberg's
Poisson formula to boundaries of Drinfeld doubles of
quantum groups**

Sergey Neshveyev

University of Oslo

`sergeyn@math.uio.no`

In his work on the Poisson formula for semisimple Lie groups Furstenberg attached two boundaries to every locally compact group G , which are now called the Poisson and Furstenberg boundaries of G . As has been observed over the years, both constructions can be approached from an operator algebraic point of view and extended to the noncommutative setting, leading to the theories of noncommutative Poisson boundaries by Izumi and of injective envelopes by Hamana. The noncommutative Poisson boundaries have been computed in a number of cases. An important aspect of the computations, both in the classical and noncommutative settings, is that the boundaries can be interpreted as universal objects measuring nonamenability of a (quantum) group G . I'll explain how such universal properties can be used to identify noncommutative Poisson and Furstenberg-Hamana boundaries in some cases, leading to quantum analogues of classical results of Furstenberg and Moore. (Joint work with Erik Habbestad and Lucas Hataishi.)