RELATIVE AMENABILITY, AMENABILITY, AND COAMENABILITY OF COIDEALS

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Abstract:
Amenability is a deeply studied property of groups, with many interesting reformulations and connections to the operator algebraic aspects of groups. For example, the reduced C^*-algebra $C_r^*(G)$ of a discrete group has a unique tracial state if and only if there are no non-trivial amenable normal subgroups. This, among other related results, makes it apparent that the structure of the amenable subgroups of G contains important information about $C_r^*(G)$. For a quantum group G, an appropriate analogue of a subgroup is a coideal $N \subseteq L^\infty(G)$. We will present notions of relative amenability, amenability, and coamenability for coideals of discrete and compact quantum groups motivated by "relativizations" of amenability and coamenability of a subgroup of a group. We will discuss the known relationships between these formally distinct notions and their relevance to certain properties of the reduced C^*-algebras of discrete quantum groups.