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Dixmier's Similarity Problem

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Compared to unitary representations, there is barely any general theory for uniformly continuous representations on (infinite-dimensional) Hilbert spaces. It is known that an amenable group is unitarizable in the sense that every uniformly continuous representation of it is similar (i.e., conjugate) to a unitary one. Dixmier's similarity problem asks whether the converse also holds true: Does unitarizability imply amenability? I will give a survey of amenability, highlighting von Neumann's problem on the characterization of amenable groups, and then report on recent progress on Dixmier's Similarity Problem. This is a joint work with N. Monod.