Title: Structure of bicentralizer algebras and inclusion of type III factors

Abstract: Connes' bicentralizer problem asks whether every bicentralizer algebra associated to any faithful normal state on a type III_1 factor with separable predual is trivial.
The motivation behind the problem being his discovery that an affirmative answer for the case of injective factors would guarantee that injective III_1 factors with separable predual are all isomorphic.
The injective case was later solved by Haagerup, but the
general case is still wide open. It was also not clear if the answer in the general situation has some application at all.
We give a brief overview of the Connes' bicentralizer problem and report our work on the structural analysis of the bicentralizer algebra associated to the inclusion of type III factors, which we belive to support the claim that the problem for the general case is indeed crucial for the study of type III_1 factors. This is joint work with Uffe Haagerup, Cyril Houdayer and Amine Marrakchi.