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*PBW deformations of smash product algebras from Hopf actions on Koszul algebras*

This talk concerns the actions of Hopf algebras  $H$  on Koszul algebras  $B$ . The aim of this work is to provide necessary and sufficient conditions for a certain filtered algebra to be a Poincaré-Birkhoff-Witt (PBW) deformation of the smash product algebra  $B\#H$ . Many ring-theoretic properties are preserved under PBW deformation, and the representation theory of examples of such deformations has been an active area of research (e.g. symplectic reflection algebras, rational Cherednik algebras). Our theorem encompasses known results on PBW deformations in the literature and we provide many interesting examples, both old and new, illustrating our result. This is joint work with Sarah Witherspoon.