The Briançon-Skoda Theorem via Weak Functoriality of Big Cohen-Macaulay Algebras

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Abstract

The Briançon-Skoda Theorem states that $\overline{J^{n+\lambda-1}} \subseteq J^\lambda$ for all integers $\lambda \geq 1$ and $J = (f_1, \ldots, f_n) \subseteq \mathbb{C}[x_1, \ldots, x_m]$, thus giving a relationship between the usual powers of an ideal and the integral closure of its powers. Unfortunately, this result does not hold for arbitrary rings. However, there have been numerous generalizations up to a closure operation on J^λ. For example, Hochster and Huneke proved generalizations using tight closure and +-closure. In this talk, I'll talk about the history of the Briançon-Skoda theorem and some of its generalizations, as well as present a generalization using sufficiently functorial choices of BCM-algebras. This is joint work with Karl Schwede.