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INTEGRALLY CLOSED RINGS IN BIRATIONAL EXTENSIONS OF TWO-DIMENSIONAL NOETHERIAN DOMAINS

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This talk is motivated by the general goal of developing a classification framework for the integrally closed overrings of a two-dimensional Noetherian domain D . Our approach to describing such rings is via their representations as intersections of valuation rings, and from this point of view it is the non-Noetherian overrings that are the most mysterious. In this talk we seek to describe intervals of integrally closed rings between a local Noetherian domain D and a localization $D[1/f]$, where $0 \neq f \in D$. Our strongest results are when D is a regular local ring and f is a regular parameter of D . Even in this case there exists a complicated abundance of Noetherian and non-Noetherian integrally closed rings between D and $D[1/f]$.

The theoretical goal of classifying rings between D and $D[1/f]$ has applications of a Noetherian nature, and leads to what appear to be new results about the exceptional prime divisor of a normalized blow-up of a two-dimensional regular local ring.

This is joint work with Francesca Tartarone.

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