Seminario de Álgebra, Geometría algebraica y Singularidades
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Geometric vertex decomposition and F-singularities

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In combinatorics, vertex decomposition is an inductive method for breaking down simplicial complexes into simpler pieces. Knutson, Miller, and Yong introduced an ideal-theoretic analogue of this procedure, known as geometric vertex decomposition (GVD). This is a special degeneration technique that allows one to recursively decompose an ideal into smaller, simpler pieces while preserving many of their geometric and algebraic properties.

In this talk, I will give an introduction to geometric vertex decomposition and discuss recent results about singularites behaves under this procedure. This is a joint work with E. De Negri, E.Gorla, P. Klein, and J. Rajchgot.

References

[1] E. De Negri, E. Gorla, P. Klein, J. Rajchgot, L. Seccia, *Lifting Frobenius splittings through geometric vertex decomposition*, arXiv preprint arXiv:2509.04364, 2025.

[2] A. Knutson, E. Miller, A. Yong, *Gröbner geometry of vertex decompositions and of flagged tableaux*, Journal für die Reine und Angewandte Mathematik, **630** (2009), 1–31.

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