



# ODTU-Bilkent Algebraic Geometry

## The Algebra of Generalised Splines

By

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**Abstract:** Classical splines are piecewise polynomial functions over polyhedral complexes with a certain degree of smoothness at the intersections of adjacent faces. They are widely used in applications of different areas, ranging from approximation theory to geometric modelling. Alternatively, splines can be interpreted as a collection of polynomial labeling the vertices of a (combinatorial) graph, with adjacent vertex-labels differing by the power of an affine line form attached to the edge. The concept of splines can be generalized to define on graphs with edge labels over arbitrary rings. Such splines are called generalized splines.

In this talk, we give a brief description of what generalized splines are on arbitrary graphs and their properties. We explain algebraic geometric and combinatorial motivations behind studying generalized splines. In the rest of the talk, we mainly focus on the module structure of generalized splines and discuss their basis.

**Date:** 21 March 2025, Friday

**Time:** 15:40 (GMT+3)

**Place:** Zoom

This is an online seminar. To request the Zoom link, please send a message to [sertoz@bilkent.edu.tr](mailto:sertoz@bilkent.edu.tr)