



ODTU-Bilkent Algebraic Geometry

Geometry of equisingular strata of quartic surfaces with simple singularities

By

Çisem Güneş Aktaş
(Abdullah Gül)

Abstract: The geometry of the equisingular strata of curves, surfaces, etc. is one of the central problems of K3-surfaces. Thanks to the global Torelli theorem and surjectivity of the period map, the equisingular deformation classification of singular projective models of K3-surfaces with any given polarization becomes a mere computation. The most popular models studied intensively in the literature are plane sextic curves and spatial quartic surfaces. Using the arithmetical reduction, Akyol and Degtyarev [1] completed the problem of equisingular deformation classification of simple plane sextics. Simple quartic surfaces which play the same role in the realm of spatial surfaces as sextics do for curves, are a relatively new subject, promising interesting discoveries.

In this talk, we discuss the problem of classifying quartic surfaces with simple singularities up to equisingular deformations by reducing the problem to an arithmetical problem about lattices. This research [3] originates from our previous study [2] where the classification was given only for nonspecial quartics, in the spirit of Akyol ve Degtyarev [1]. Our principal result is extending the classification to the whole space of simple quartics and, thus, completing the equisingular deformation classification of simple quartic surfaces.

[1] Akyol, A. ve Degtyarev, A., 2015. Geography of irreducible plane sextics. Proc. Lond. Math. Soc. (3), 111(6), 13071337. ISSN 0024-6115. doi:10.1112/plms/pdv053.

[2] Güneş Aktaş, Ç, 2017. Classification of simple quartics up to equisingular deformation. Hiroshima Math. J., 47(1), 87112. ISSN 0018-2079. doi:10.32917/hmj/1492048849.

[3] Güneş Aktaş, Ç, to appear in Deformation classification of quartic surfaces with simple singularities. Rev. Mat. Iberoam. doi:10.4171/RMI/1431

Date: 3 November 2023, Friday

Time: 15:40 (GMT+3)

Place: Zoom

To request the event link, please send a message to sertoz@bilkent.edu.tr