Colloquium

Title

Exotic 4-manifolds and complex surfaces, algebraic fibrations, singularities and knots

Speaker:	Sümeyra Sakalli, University of Arkansas
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Room:	Virtual

Abstract: Exotic manifolds are smooth manifolds which are homeomorphic but not diffeomorphic to each other. After Donaldson's construction of exotic $\mathbb{CP}^2 \# 9\overline{\mathbb{CP}}^2$, constructing exotic 4-manifolds has been an active research area in symplectic and low dimensional topology in the last 35 years, with a lot of progress as well as many open problems.

In this talk, I will describe my research on exotic 4-manifolds in relation to complex surfaces, algebraic fibrations, singularities and knots. In particular, I will present the smallest exotic 4-manifolds with nonnegative signatures, deformation and splitting singularities in algebraic fibrations, and generalized chain surgeries which is a symplectic operation exchanging two Stein fillings. I will also discuss slicing knots in definite 4-manifolds. Some of these are joint with Akhmedov, Karakurt, Kjuchukova, Miller, Park, Ray, Van Horn-Morris and Yeung.