



ODTU-Bilkent Algebraic Geometry

Liftable homeomorphisms of finite abelian p -group regular branched covers over the 2-sphere and the projective plane

By

Yıldıray Ozan
(ODTÜ)

Abstract: This talk mainly is based our work joint with F. Atalan and E. Medetoğulları.

In 2017 Ghaswala and Winarski classified finite cyclic regular branched coverings of the 2-sphere, where every homeomorphism of the base (preserving the branch locus) lifts to a homeomorphism of the covering surface, answering a question of Birman and Hilden. In this talk, we will present generalizations of this result in two directions. First, we will replace finite cyclic groups with finite abelian p -groups. Second, we will replace the base surface with the real projective plane.

The main tool is the algebraic characterization of such coverings in terms of the automorphism groups of these finite abelian p -groups. Due to computational insufficiencies we have complete results only for groups of rank 1 and 2.

In particular, we prove that for a regular branched A -covering $\pi: \Sigma \rightarrow S^2$, where $A = \mathbb{Z}_{p^r} \times \mathbb{Z}_{p^t}$, $1 \leq r \leq t$, all homeomorphisms $f: S^2 \rightarrow S^2$ lift to those of Σ , if and only if $t=r$ or $t=r+1$ and $p=3$.

If time permits we will also present some applications to automorphisms of Riemann surfaces.

Date: 12 February 2021, Friday

Time: 15:40

Place: Zoom

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