

Boğaziçi MATH COLLOQUIUM

Realizing homotopy group actions

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Abstract: A homotopy action of a group G on a topological space X is a group homomorphism from G to the group of homotopy classes of self-homotopy equivalences of X . George Cooke described an obstruction theory for realizing a homotopy action of a finite group G on a space X by strict action. However, the resulting G -space is only determined up to a homotopy equivalence which is a G -map (Borel equivalence), and in this sense every G -space is equivalent to a free one. So the more delicate aspects of equivariant topology are not visible in this way.

A more informative approach to equivariant homotopy theory, due to Bredon, studies G -spaces X up to G -homotopy equivalence, that is, G -maps having G -homotopy inverses. The purpose of this talk is to define a notion of homotopy action of a finite group in Bredon equivariant homotopy theory, and describe an associated inductive procedure for realizing such an action by a strict one.

(This is a joint work with Prof. David Blanc)

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