

SEMINÁRIO DE ÁLGEBRA

**TEST ELEMENTS AND RETRACTS IN FREE  
GROUPS**

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Zoom

**Abstract.**

An element  $x$  of a group  $G$  is called a test element if for any endomorphism  $\phi$  of  $G$ ,  $\phi(x) = x$  implies that  $\phi$  is an automorphism. A subgroup  $R$  of a group  $G$  is said to be a retract of  $G$  if there is a homomorphism  $r : G \rightarrow R$  that restricts to the identity on  $R$ . I will talk about test elements and retracts in free groups. In particular, I will discuss the following question raised by Bergman: Let  $F$  be a free group of finite rank and let  $R$  be a retract of  $F$ . Is  $H \cap R$  a retract of  $H$  for every finitely generated subgroup  $H$  of  $F$ ?

This talk is based on a joint work with Slobodan Tanushevski and Pavel Zalesskii.