

Seminarium geometrów

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Poniedziałek, 29.01.2024, 14:15 HS

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Group ring aspects of cohomological properties

Abstract: In this talk we will present our recent results which concern some aspects of group cohomology expressed in terms of the real group ring. We plan to divide our talk into two separate parts.

In the first part, we will discuss an alternative proof of Kazhdan's property (T) for elementary matrices, as well as other related groups. Property (T) translates in these cases to vanishing of the first cohomology with unitary coefficients. We recall original Ozawa's characterization of this property and compare it with another characterization due to Bader and Nowak which involves different Laplacian. Our alternative proof applies the Laplacian of Bader and Nowak. This is a joint work with Marek Kaluba, Piotr W. Nowak, and, recently, Jakub Szymański.

The second part will be focused on the concept of an *order unit* in the setting of group rings. Order units play an important role in expressing the cohomological properties by group ring means. In particular, it is crucial that the Laplacian from Ozawa's characterization is an order unit in the augmentation ideal. We will present our recent result which is indicating an infinite family of order units in the augmentation ideal. This allows us to reprove the fact that Ozawa's Laplacian is an appropriate order unit. This is a joint work with Piotr W. Nowak.

streaming via ZOOM:

Meeting ID: 967 6507 7409

Meeting password: "GS" (two letters) followed by the Euler characteristic of the closed orientable surface of genus 89.