

THE UNIVERSITY



OF HONG KONG

*Institute of Mathematical Research
Department of Mathematics*

GEOMETRY SEMINAR

Structure of standard modules, Springer correspondence and Dirac cohomology

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Abstract

Dirac operator has its origin in the study of quantum mechanics. It has been applied in the representation theory of real groups to realize discrete series by the work of Parthasarathy and Schmid. In around 1997, motivated from the study of Dirac operators and unitary representations, Vogan introduced the concept of Dirac cohomology along with a deep conjecture relating to the infinitesimal character of a Harish-Chandra module. The conjecture has been later proved by Huang-Pandzic and has been generalized to many other settings.

A particular interesting setting is graded Hecke algebras, whose Dirac theory was established by Barbasch-Ciubotaru-Trapa in 2010. Standard modules are the basic objects for constructing simple ones, and Lusztig gave a geometric construction of them in connection with the generalized Springer correspondence. In this talk, I shall explain how one obtains some structures from the generalized Springer correspondence, and how Dirac cohomology provides an efficient tool to encode some complicated structures. If time is permitted, applications of results will be given. The talk is based on my preprint arXiv:1610.00137.

Date: March 21, 2017 (Tuesday)

Time: 4:00 - 5:00pm

Venue: Room 210, Run Run Shaw Bldg., HKU

All are welcome