

The Hong Kong University of Science and Technology

Department of Mathematics

PhD THESIS EXAMINATION

Dirac cohomology for orthosymplectic superalgebras

By

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<u>ABSTRACT</u>

In this thesis, we firstly recall some basic definitions and theorems of Lie algebras and representations. In particular, we review the irreducible Harish-Chandra $\mathfrak{sl}(2)$ -modules and indecomposable $\mathfrak{sl}(2)$ -modules. Then, we recall the definitions of Lie superalgebras and their highest weight theory for basic Lie superalgebras. Especially, we focus on some concrete examples of orthosymplectic Lie superalgebras. Furthermore, we systematically investigate the Dirac cohomology for basic Lie superalgebras. At last, we obtain the Dirac cohomology of finite-dimensional $\mathfrak{osp}(1 \mid 2)$ -modules and the Dirac cohomology of the lowest weight $\mathfrak{osp}(1 \mid 2)$ -modules explicitly.

Date:	7 August 2020, Friday
Time:	12:30 p.m.
ZOOM Meeting:	https://hkust.zoom.us/j/4534424791

Thesis Examination Committee:

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