特任助教 (Project Research Associate)
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A. 研究概要

本年度はまず昨年度に引き続き一般 Verma 加群間の準同型の具体的構成について取り組んだ。この研究によって自身の Ph.D. thesis では埋めることの出来なかった場合をすべて埋めることが出来た。この結果は論文 [3] として SIGMA Symmetry Integrability Geom. Methods Appl., に最近掲載された。
また上記の研究の他に本年度は、本研究科の小林俊行教授と Université de Reims-Champagne-Ardenne（フランス）の M. Pevzner 氏と共同で、あるベクトル束間の covariant differential operator に関する研究を始めた。この研究の結果は preprint ととして近々まとめる予定である。

As a project that I have worked on this year, I could first raise my study on explicit construction of homomorphisms between generalized Verma modules. In my Ph.D thesis, there were three cases left open. I have closed these three cases this year. The results were recently published in SIGMA Symmetry Integrability Geom. Methods Appl., ([3]).
Besides the project mentioned above, I have worked on covariant differential operators between certain vector bundles. This is a joint work with Prof. T. Kobayashi from this department and Prof. M. Pevzner from Université de Reims-Champagne-Ardenne, France. We are planning to write a preprint on the project in the near future.

B. 発表論文

[1] Kubo, T. “Special values for conformally invariant systems associated to maximal parabolics of quasi-Heisenberg type. ” (59 pages) (to appear in Trans. Amer. Math. Soc.)

[2] Kubo, T. “The Dynkin index and conformally invariant systems associated to parabolic subalgebras of Heisenberg type.” (15 pages) (to appear in Osaka J. Math.)

[3] Kubo, T. “Systems of differential operators and generalized Verma modules”, SIGMA Symmetry Integrability Geom. Methods Appl., **10** (2014), no. 008, 35 pages.

[4] Kubo, T. “On the Homomorphisms between the generalized Verma modules arising from conformally invariant systems.” J. Lie Theory, **23** (2013), no. 3, 847-883.

[5] Kubo, T. “Conformally invariant systems of differential operators associated to maximal parabolics of quasi-Heisenberg type.” Proc. Japan Acad. Ser. A Math. Sci., **89** (2013), no. 3, 41-46.

[6] Kubo, T. “A system of third-order differential operators conformally invariant under $\mathfrak{sl}(3,\mathbb{C})$ and $\mathfrak{so}(8,\mathbb{C})$.” Pacific J. Math. **253** (2011), no. 2, 439-453.

[7] Kubo, T. “On constructing explicit homomorphisms between generalized Verma modules”, Development of Representation Theory and its Related Fields, RIMS Kôkyûroku (2013) (to appear)

[8] Kubo, T. “On the homomorphisms between generalized Verma modules arising from conformally invariant systems”, Representations of Lie Groups and Supergroups, Oberwolfach report (2013)

C. 口頭発表

[1] The Dynkin index and parabolic subalgebras of Heisenberg type、Conference in celebration of 60th birthday of Prof. Matsuki、鳥取、2014 年 2 月

[2] On $\mathfrak{g}$-manifolds, $\mathfrak{g}$-bundles, and conformally invariant systems、青山学院大学、2013 年 8 月

[3] Construction of explicit homomorphisms between generalized Verma modules、Harmonic Analysis Seminar、 Louisiana State University、USA、2013 年 6 月

[4] Constructions of explicit homomorphisms between generalized Verma modules、Group Actions with applications in Geometry and Analysis、in honour of Toshiyuki Kobayashi 50th birthday、Université de Reims Champagne-Ardenne、フランス、2013 年 6 月

[5] On the homomorphisms between generalized Verma modules arising from conformally invariant systems、Representations of Lie Groups and Supergroups、Oberwolfach、ドイツ、2013 年 3 月

[6] On conformally invariant systems of third order differential operators of Heisenberg type、表現論セミナー、九州大学、2013 年 1 月

[7] On conformally invariant systems of third order differential operators of Heisenberg type、表現論セミナー、北海道大学、2012 年 12 月

[8] On the homomorphisms between generalized Verma modules arising from conformally invariant systems、表現論シンポジウム、鹿児島、2012 年 12 月

[9] Conformally invariant systems of second order differential operators、秋季総合分科会（一般講演)、九州大学、2012 年 9 月

[10] Conformally invariant systems of differential operators of non-Heisenberg parabolic type、 Harmonic Analysis Seminar, Louisiana State University、 USA、2012 年 2 月

D. 講義

[1] 数学 II 演習 ①・②：線形代数に関する理解を深めてもらうため、演習問題に取り組ませた。(教養学部前期課程講義)

E. 修士・博士論文

F. 対外研究サービス

G. 受賞

Oklahoma State University, USA

[1] 100 Graduate Students of Significance (2012)

[2] Jeanne Agnew Outstanding Teaching Award (2010)

[3] Schiller J. Scroggs Distinguished Graduate Fellowship (2009)

H. 海外からのビジター

連携併任講座