

第15回 Wolfram Bauer



- 講演者: Wolfram Bauer 氏 (Leibniz Universität Hannover, Germany)
- 題目: Fundamental solution of a class of ultra-hyperbolic operators on pseudo-\$H\$-type groups
- 日時: 2018年12月7日(金) 16:30 ~ 17:30
- 場所: 数学科也三十一室 (4号館3階)

seminar, 2018

abstract

Pseudo-\$H\$-type Lie groups $G_{r,s}$ of signature (r,s) are defined via a module action of the Clifford algebra $\mathcal{C}\ell_{r,s}$ on a vector space $V \cong \mathbb{R}^{2n}$. They form a subclass of all 2-step nilpotent Lie groups and based on their algebraic structure they can be equipped with a left-invariant pseudo-Riemannian metric. Let $\mathcal{N}_{r,s}$ denote the Lie algebra corresponding to $G_{r,s}$. A choice of left-invariant vector fields $[X_1, \dots, X_{2n}]$ which generate a complement of the center of $\mathcal{N}_{r,s}$ gives rise to a second order operator
$$\Delta_{r,s} := \big(X_1^2 + \dots + X_n^2 \big) - \big(X_{n+1}^2 + \dots + X_{2n}^2 \big),$$
 which we call ultra-hyperbolic. In terms of classical special functions we present families of fundamental solutions of $\Delta_{r,s}$ in the case $r=0$, $s>0$ and study their properties. In the case of $r>0$ the operator $\Delta_{r,s}$ admits no fundamental solution in the space tempered distributions. Finally, we discuss the question of local solvability of the operator. This is a joint work with I. Markina (University of Bergen) and A. Froehly (formerly Leibniz Universität Hannover).

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[2] P. Ciatti, Scalar products on Clifford modules and pseudo-\$H\$-type Lie algebras, Ann. Mat. Pura Appl. 178 (4), 132 (2000).

[3] K. Furutani, I. Markina, Complete classification of pseudo-\$H\$-type Lie algebras: I, Geom. Dedicata 190 (2017) 23-51.

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4 images

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Last update: **2021/02/11 11:09**

