陳又瑄Chenys

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主旨: Colloquium 演講 (by 張德健_

Dear Ms. Chen,

Please announce the following talk.
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時間: 12月19日 下午 1:10-2:00

Speaker: 張德健教授(Georgetown University)

題目 : Heat Kernels for a family of Grushin operators

摘要:
\begin{abstract}
In this talk, we construct the heat kernel for the
second-order operator
$\Delta_\X=\frac1{2}\sum_{k=1}^n\Big(\frac{\partial}{\partial
x_k}\Big)^2+ \frac1{2}\sum_{k=1}^n
\Big(x_k^{m_k} \frac{\partial}{\partial y_k}\Big)^2$ with $m_k\in {\bf N}$,
which is a degenerate
elliptic operator. Obviously, this operator is closed related to the
Grushin operator
$L_G=\frac12\Big(\frac{\partial}{\partial
x}\Big)^2+ \frac1{2}\Big(x^{m} \frac{\partial}{\partial y}\Big)^2$ with
$m\in {\bf N}$.
In this paper, we fist give a complete description of the geometry induced
by the operator L_G. More precisely, given any two points in the
space, the number of geodesics and the lengths of the geodesics
are calculated. Then we find modified complex action functions and show
that the critical values of this function will recover the
lengths of the corresponding geodesics. We also find the volume
element by solving a generalized transport equation. Finally, the formula
for the heat kernel of
the diffusion operator $\frac{\partial}{\partial t}-\Delta_\X$ is obtained.
The formula involves an integral of a product between the volume function
and an exponential term.
\end{abstract}

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Thank you,

Best,

Hsin-Yuan

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