

Ratnakumar Peetta Kandy

Research Summary:

I have been continuing my work on regularity property of solutions to Schrödinger equation $(i\partial_t - L)u = 0$ associated to a general second order operator L . One such result is a Strichartz type estimate, established for the special hermite operator $L = -\Delta + \frac{1}{4}|z|^2 + i \sum_{j=1}^n x_j \partial_{y_j} - y_j \partial_{x_j}$ on \mathbb{C}^n which may be considered as a prototype for Schrödinger operator with a magnetic potential and a scalar potential. This work is submitted for publication. This result has been extended to Schrödinger equation associated to a wide class of differential operators L with discrete spectrum. This preprint is in preparation.

Apart from this I am also studying the geometry of rank one symmetric spaces. In a joint work with Dr. Ritumoni Sarma, we have established a cosine formula for the geometry of the rank one symmetric spaces of exceptional type. Such a formula is crucial in the establishing the “restricted weak type” inequality for the spherical maximal operator on symmetric spaces which is not known for symmetric spaces of exceptional type. This preprint is in preparation.

Preprints:

1. Ratnakumar P.K., *On Schrödinger propagator for the special hermite operator*, preprint, (submitted for publication)
2. Ratnakumar P.K., *On Schrödinger propagator for differential operators with discrete spectrum*, (in preparation)
3. Ratnakumar P.K., Ritumoni Sarma, *A cosine formula for the geometry of rank one symmetric spaces*, (in preparation)

Conference/Workshops Attended:

1. *Harmonic and Geometric Analysis with Applications to Partial Differential Equations*, Spain, August, 2006
2. *International Congress of Mathematicians*, Spain, August, 2006
3. *Conference on Harmonic and Functional Analysis*, India, Dec, 2006
4. *Modern Analysis and Allied Areas*, India, February, 2007.

Visits to other Institutes:

1. Indian Institute of Technology Kanpur, Kanpur, India, Dec 2006,
2. Banaras Hindu University, Varanasi, India, February 2007.

Invited Lectures/Seminars:

1. *On Schrödinger propagator for a class of differential operators with discrete spectrum*, Conference on Harmonic and Functional Analysis, IIT Kanpur, Kanpur, December 2006.
2. *On Schrödinger propagator for differential operators with discrete spectrum*, Modern Analysis and Allied Areas, Banaras Hindu University, Varanasi, February 2007.

Other Activities:

1. Organised Visiting Students Study Programme (Mathematics) at HRI, June, 2006.
2. Gave a course on Real Analysis to Ist semester Ph.D. Students.