The Abdus Salam
International Centre
for Theoretical Physics
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United Nations
Educational, Scientific and
Cultural Organization

IAEA
International Atomic Energy Agency

Workshop and Conference on Geometrical Aspects of Quantum States in Condensed Matter

1 - 5 July 2013

(Miramare - Trieste, Italy)

TOPICS

Geometrical notions and ideas have played a central role in Condensed Matter Physics. Examples include the geometrical and adiabatic (Berry) Phase, Topological Defects, electronic modes coupled to topological defects, quantum anomalies and many others. In recent years the use of geometrical concepts has expanded significantly. This includes the entire field of Topological Insulators and Superconductors which has seen an explosive development in past half decade. Geometrical phenomena play an important role in quantum information theory which are fueled by notions of geometry and topological protection, such as for example non-Abelian Statistics. A parallel recent development of geometrical ideas in condensed matter gave rise to development of a hydrodynamics approach to quantum liquids such as Fractional Quantum Hall effect and anomalous hydrodynamics having application in high energy physics such as heavy ion collisions. The entire long-standing field of the fractional quantum Hall effect is strongly influenced by these ideas, including topical developments such as the Hall viscosity.

In a very independent development geometrical thinking plays a key role in quantum Holography including especially gauge/gravity dualities. Possible implications of these developments to issues in condensed matter physics have been a very active direction of research in this field. Related, and partially emerging from those research directions are holographic approaches to the physics of hot and dense quantum matter, and more generally, quantum hydrodynamic approaches to strongly interacting quantum systems. Finally, the emerging field of quantum entanglement is in part influenced by geometrical ideas.

PARTICIPATION

Scientists from all countries that are members of the United Nations, UNESCO or IAEA may attend the Workshop. As the activity will be conducted in English, participants should have an adequate working knowledge of this language. There is no registration fee. Travel and subsistence expenses of participants should be borne by their home institutions. Limited funds are available for some participants who are nationals of, and working in, a developing country, to be selected by the Organizers. However, every effort should be made by candidates to secure at least partial support for their travel expenses.

HOW TO APPLY

The online application form can be accessed on the activity's website:

http:http://cdsagenda5.ictp.it/full_display.php?ida=a12192

Once in the website, comprehensive instructions will guide you step-by-step on how to fill out and submit the application form before the deadline of **15 March 2013**.

SECRETARIAT

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Deadline for applications

15 March 2013