

Seminar

John Bell's no-go theorem: foundational aspect and applications

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Study of correlations plays important role almost in all branches of sciences: correlations between earthquakes and tsunamis in geophysics, correlations between tides and the moon's positions in classical physics, correlations in medical science, genetics, and economics, correlations between measurement results in quantum physics to name but a few examples. Once a correlation has been identified, scientists then try to find a theoretical model to explain it. All the correlations observed in classical world allows a satisfactory explanation under the paradigm of 'local-realism'. In a seminal paper (in 1964) John Bell introduced an empirically testable criterion to establish the fact that in the quantum scenario not all correlations allow a satisfactory explanation compatible with the classical world view of localrealism. This result by J. Bell is considered to be one of the most important results in quantum foundations and it actually answers a long standing question posed by Einstein and collaborators about the foundational status of quantum theory. Apart from its foundational importance Bell's theorem has recently been shown to have relevance in many practical tasks like device independent (DI) cryptography, DI randomness certification, generation, and expansion, DI dimension witness etc. In my talk I will try to explain this particular theorem of John Bell, mostly its foundational aspect along with its applicability in DI technologies.

Monday, Apr 24th 2017

4:00 PM (Tea/Coffee at 3:45 PM)

Seminar Hall, TCIS