INDIAN STATISTICAL INSTITUTE

Theoretical Statistics and Mathematics Unit, Kolkata

SEMINAR

Date: January 04, 2024
Time: 04:00 PM

VENUE:

L-infinity

(5th Floor, A.N. Kolmogorov Bhavan), ISI Kolkata

TITLE:

Seiberg-Witten equations in all dimensions

SPEAKER:

Partha Sarathi Ghosh

University of Brussels

ABSTRACT:

Starting with an n-dimensional oriented Riemannian manifold with a $\Spinc$-structure, we describe an elliptic system of equations which recover the Seiberg-Witten equations when $n=3,4$. We prove a collection of a priori estimates for solutions to these equations. Unfortunately they are not sufficient to prove compactness modulo gauge, instead leaving the possibility that bubbling may occur. An obvious question is what purpose might these higher-dimensional Seiberg--Witten equations serve? In higher dimensions, there is no need for a gauge theoretic approach to study smooth structures since, for example, the h-cobordism theorem holds. Instead, one might speculate that higher dimensional Seiberg-Witten equations could prove useful when studying manifolds with geometric structures. This fantasy is inspired by Taubes' work on symplectic 4-manifolds. If time permits, we also describe special modified versions of these Seiberg--Witten equations in dimensions 6, 7 and 8, which make sense on manifolds with $\SU(3)$, G_2 and $\Spin(7)$ structures respectively.

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