SEMPARIS – Séminaires en région parisienne

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Cours

Vendredi 25 Novembre 2016, 10 :00
IPHT, Salle Claude Itzykson, Bât. 774
Domaines : physics

Titre : *Group Theory in a Nutshell for Physicists (2/5)*

Orateur : **Anthony Zee (KITP and IPhT)**

Résumé : *I intend to follow closely a portion of the material contained in my textbook "Group Theory in a Nutshell for Physicists" (Princeton University Press 2016), which is in turn based on a course I gave at the University of California at Santa Barbara. The course was for graduate students and qualified undergraduates.*

For this 5-lecture course, I plan to focus on the Cartan classification of Lie algebras and Dynkin diagrams. Thus, I expect students to be already familiar with the concept of a group and of its matrix representations.

We will begin with a quick overview of SU(N), focusing on SU(2) and SU(3) in particular, and drawing from parts IV and V of my book. I will then follow part VI in detail, covering the following topics : roots and weights for orthogonal, unitary, and symplectic algebras ; Cartan classification ; and Dynkin diagrams. If we do find ourselves with extra time on our hands, there are many additional topics we could choose to discuss, such as the Majorana equation and its emergence in condensed matter physics.

Neither this course nor the textbook is suitable for people seeking mathematical rigor. The treatment of group theory is given at a level customary for physics students.