Methods of Mathematical Physics

PHY n381N, Unique No. 93170; CAM n381N, Unique No. 95395

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Course Description: This is an introductory course on the Mathematics of Quantum Physics, but it is geared towards the modern developments (Rigged Hilbert Spaces, distributions, representations of groups and semigroups) and their applications to the time asymmetric quantum theory and the theory of resonances and decay phenomena. The course consists of two parts: The first part introduces and explains the mathematics; The second part describes the interpretation of the mathematical theory in quantum physics.

Meeting: Since there is a mistake in the course schedule, we will meet either MTWThF 11.30–1.00 for five weeks, or MWF 11.30–1.00 for nine weeks. To be decided at the first meeting, Wednesday, June 07.

Texts: Recommended: I. M. Gel'fand et. al., *Generalized Functions,* Vol. 2, Chapter 1; Vol. 4, Chapter 1.4, Academic Press (1968); A. Bohm, M. Gadella, *Dirac Kets, Gamow Vectors and Gel'fand Triplets,* Springer (1989). Textbook Required: None. Some lecture notes will be provided.

Prerequisites: Linear Algebra and Analysis and some knowledge of Quantum Mechanics will be useful.

Grading: PHY n381N is an Advanced Course in the physics department. The grades for PHY n381N will be based upon homework, participation in class discussion and a take-home final exam. Optional projects and/or seminar presentations may be counted toward the final grade. This course may also be taken as CAM n381N, for which there is no required final exam.