慶應義塾大学 21世紀COEプログラム
「統合数理科学：現象解明を通した数学の発展」

Integrative Mathematical Sciences
統合数理科学

Keio University
1858
CALAMVS GLADIO FORTIOR

Pathways Lecture Series in Mathematics, KEIO

Speaker : Prof. Alan David Weinstein
(University of California, Berkeley)

Place : Raiosha, Symposium Space
Hiyoshi Campus, KEIO University

Lecture 1	10:00 〜 11:00	May 31, 2006 (Wednesday)
Lecture 2	10:00 〜 11:00	June 1, 2006 (Thursday)
Lecture 3	10:00 〜 11:00	June 2, 2006 (Friday)

Group(oid)-like objects in Poisson geometry and algebra

A group is a set G with a product mapping $m:G\times G\ to G$, a unit mapping e from a one point set to G, and an inversion mapping i from G to itself, satisfying associativity and the axioms for the unit and inverses.

By replacing G by an object with another structure (e.g. Poisson manifold, differentiable stack, or associative algebra), and the mappings m, e, and i by mappings appropriate to this structure (sometimes going in the "wrong direction", we obtain a wide variety of ``group-like" objects. All of the above is true for groupoids as well. As a consequence, it is posssible to integrate any Lie algebroid to a Lie groupoid in the world of differentiable stacks, and we can put a group-like structure on an irrational rotation algebra which plays the role of polynomial functions on the quotient of the circle by a dense cyclic subgroup.

In these lectures, we will start by explaining the basic notions of (symplectic) groupoid, differentiable stack, and Hopf algebra, and will develop the theory of group-like differentiable stacks, along with the dual notion of hopfish algebra.

REFERENCES:
math.DG/0405003 Integrating Lie algebroids via stacks. Hsian-Hua Tseng, Chenchang Zhu. Compositio Mathematica, Volume 142 (2006), Issue 01, pp 251-270.

math.QA/0510421 Hopfish algebras. Xiang Tang, Alan Weinstein, Chenchang Zhu. Pacific Journal of Mathematics, to appear.

Hopfish structure and modules over irrational rotation algebras. Christian Bl ?hmann, Xiang Tang, Alan Weinstein, in preparation.

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