Math 991A, Spring 2001
Hall Algebras and Quantum Groups
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In this course, I will give an introduction to quiver representation approach to quantum groups. It will include the following topics:

- Representations of quivers (an introduction).
- Hall algebras and double Hall algebras.
- Skew-Hopf pairing and Drinfeld double.
- Green formula for Hall algebras.
- Integrable modules and Yang-Baxter relations over double Hall algebras.
- Braid group actions and BGP-reflection functors
- Relating Hall algebras to quantum groups.

There is no fixed textbook for this course.

Prerequisite: Higher algebra course. Some knowledge of homological algebra and semisimple Lie algebras over complex numbers will be helpful but not necessary.