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NONCOMMUTATIVE PRINCIPAL FIBER BUNDLES

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Abstract

I'll first recall the basic dictionary of noncommutative geometry between spaces and algebras and between groups and Hopf algebras. Then I will introduce noncommutative principal fiber bundles, which are noncommutative (or quantum) analogues of principal fiber bundles where the role of the structural group is played by a Hopf algebra rather than by a group. There are many examples of such bundles in quantum group theory. Nicely enough, they have a simple algebraic definition. I will give examples of these objects, list some of their properties, and show how to construct an important class of them. I will close the lectures by demonstrating how any Hopf algebra (or quantum group) fibers naturally over an algebraic variety. This means that there is classical geometry behind any Hopf algebra. No previous knowledge of quantum groups or Hopf algebras will be assumed. All concepts I will introduce will be illustrated with simple examples.

Lecture 1:	Thursday	October 14	10:00
Lecture 2:	Friday	October 15	10:00
Lecture 3:	Monday	October 18	10:00
Lecture 4:	Tuesday	October 19	10:00

All talks will be held at **IMBM Seminar Room, Boğaziçi University**.

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