

# SEMPARIS – Séminaires en région parisienne

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## Séminaire informel

**Jeudi 14 Septembre 2017, 11 :00**

LPTHE, Bibliothèque

Domaines : cond-mat.stat-mech

Titre : *The KP hierarchy and its superspace construction*

Orateur : **Olivier Blondeau-Fournier ( Université Laval, Québec )**

Résumé : *The Kadomtsev-Petviashvili (KP) hierarchy is a dynamical system that can be viewed as defined on a infinite dimensional Grassmannian and which contains an infinite tower of nonlinear differential equations. This system is completely integrable, meaning that one can find all the conserved quantities, and the various solutions are known exactly. The KP hierarchy interplays with many physical system, such as the related KdV system, and is equivalently formulated as a boson-fermion correspondence. This latter construction is of particular interest since it beautifully connects with the theory of symmetric polynomials, through the formalism of vertex operators and Bernstein operators. In view of its great impact in mathematical physics, the KP hierarchy can be extended to include larger classes of systems with the supersymmetry. In this talk, I will first show a brief review of the KP hierarchy system focusing on its connection with symmetric polynomials and in particular the Schur functions. Then, I will present my recent work on the supersymmetric generalization of the KP hierarchy from the point of view of a superspace analogue of the Bernstein operators.*

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