

“Integrable quantum systems and solvable statistical mechanical models”
«**Systèmes quantiques intégrables et modèles statistiques résolubles**»
June 30 – July 5, 2008/**30 juin – au 5 juillet 2008**

Tau functions, random processes and equilibrium models of $1 - D$ fermi gases

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Abstract

Tau functions expressed as fermionic expectation values are shown to provide a natural description of a number of random exclusion processes and statistical models involving configurations of identical fermi particles on the integer lattice. These include a discrete version of simple exclusion processes (ASEP), nonintersecting random walkers, lattice Coulomb gas models and others. This also provides a powerful tool for combinatorial calculations involving paths between pairs of partitions.

Based on joint work with Alexander Yu. Orlov.