

---

**OLEG LISOVYY**, Institut Denis-Poisson, Université de Tours  
*Painlevé functions, Fredholm determinants and combinatorics*

I will explain how to associate a tau function to the Riemann-Hilbert problem set on a union of non-intersecting smooth closed curves with generic jump matrix. The main focus will be on the one-circle case, relevant to the analysis of Painlevé VI equation and its degenerations to Painlevé V and III. The tau functions in question will be defined as block Fredholm determinants of integral operators with integrable kernels. They can be alternatively represented as combinatorial sums over tuples of Young diagrams which coincide with the dual Nekrasov-Okounkov instanton partition functions for Riemann-Hilbert problems of isomonodromic origin.