

Riemann-Hilbert Problems from Refined Donaldson-Thomas Theory

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The notion of BPS structure (or symmetric stability structure) describes the output of Donaldson-Thomas's theory on a 3-Calabi-Yau category and can be realized also from a quadratic differential on a Riemann surface. A BPS structure can be associated with a Riemann-Hilbert problem, which allows us to understand the Kontsevich-Soibelman wall-crossing formula as an iso-Stokes property when the BPS structure varies appropriately. In this talk, I will review the notion of BPS structure together with some examples and what is known about associated Riemann-Hilbert problems. I will then present a solution to the problem in a simple case said: "uncoupled". The solution is obtained analytically and, time permitting, will be compared with a more recent solution (due to Iwaki-Kidwai) obtained by means of Voros symbols.

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