

Seminar

Znanstvenog centra izvrsnosti
QuantiXLie i Instituta za fiziku

Andrey S. Mishchenko

RIKEN Center for Emergent Matter Science, Wako, Saitama, Japan

Numerical analytic continuation: answers to well-posed questions in ill-posed problem

We formulate [1] the problem of numerical analytic continuation in a way that lets us draw meaningful conclusions about properties of the spectral function based solely on the input data. Combination of the stochastic optimization (SO) and consistent constraints (CC) method is used to obtain large number of independent solutions each describing the analytically continued spectrum with accuracy restricted by error-bars of the input data. We study different linear combinations of the independent solutions giving also valid final solution and look to how extent the final spectra can be different without compromising the error-bars of the input data. Such new philosophy (SOCC method) requiring the above post-processing of the analytic continuation data turns out to be crucial to reliably characterize the accuracy - or even ambiguity - of the output. We perform illustrative tests for spectra with a double-peak structure, where we critically examine which spectral properties are accessible and which ones are lost. We also show some important practical examples from science [2, 3] and technology [4].

- [1] O. Goulko, A. S. Mishchenko, L. Pollet, N. Prokof'ev, and B. Svistunov, Numerical analytic continuation: answers to well-posed questions, Phys. Rev. B 95, 014102 (2017).
[2] O. Goulko, A. S. Mishchenko, N. Prokof'ev, and B. Svistunov, Dark continuum in the spectral function of the resonant Fermi polaron, Phys. Rev. A 94, 051605(R) (2016).
[3] A. S. Mishchenko, N. Nagaosa, G. De Filippis, A. de Candia, and V. Cataudella, Mobility of Holstein Polaron at Finite Temperature: an Unbiased Approach, Phys. Rev. Lett. 114, 146401 (2015).
[4] H. Matsui, A.S. Mishchenko, and T. Hasegawa: Distribution of localized states from the analysis of electron spin resonance spectra in organic transistors, Phys. Rev. Lett. 104, 056602 (2010).

Četvrtak, 5. 7. 2018., 11:00 sati
Institut za fiziku, predavaonica
u dvorani 'Mladen Paić' (III krilo)



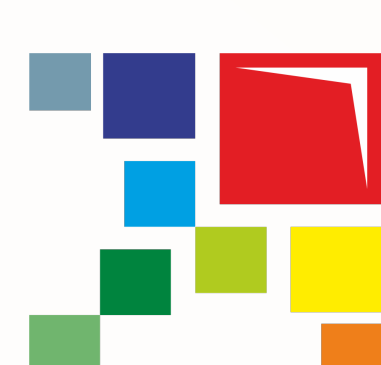
Znanstveni centar izvrsnosti
za kvantne i kompleksne sustave te
reprezentacije Liejevih algebri

Projekt KK.01.1.1.01.0004

Projekt je sufinancirala Europska unija iz
Europskog fonda za regionalni razvoj. Sadržaj
ovog seminara isključiva je odgovornost
Prirodoslovno-matematičkog fakulteta
Sveučilišta u Zagrebu te ne predstavlja
nužno stajalište Europske unije.



Europska unija
Zajedno do fondova EU



Operativni program
KONKURENTNOST
I KOHEZIJA



EUROPSKA UNIJA
Europski fond za regionalni razvoj