



# FYZIKÁLNY ÚSTAV SAV

Oddelenie komplexných fyzikálnych systémov

Dúbravská cesta 9, 845 11 Bratislava

## SEMINÁR

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### Physicist's view on Riemann/Epstein zeta-functions

#### Abstrakt

Riemann zeta-function  $\zeta(s) = \sum_{n=1}^{\infty} n^{-s}$  is the most important object in Number theory. Riemann's hypothesis states that the non-trivial zeros of this function, analytically continued to the whole complex plane  $s$ , lie exclusively on the critical line  $\Re(s) = \frac{1}{2}$ . In a joint work with Igor Travěnek we consider a  $d$ -dimensional hypercubic generalization of the Riemann function, the so-called Epstein zeta-function  $\zeta^{(d)}(s) = \frac{1}{2} \sum_{n_1, \dots, n_d} (n_1^2 + \dots + n_d^2)^{-s/2}$  with the critical line  $\Re(s) = \frac{d}{2}$ . Combining analytical and numerical methods we show the mechanism of generation of off-critical zeros from the critical ones at special non-integer values of dimension  $d$ .

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