

Institut Ruđer Bošković  
ZAVOD ZA TEORIJSKU FIZIKU  
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SEMINAR ZAVODA ZA TEORIJSKU FIZIKU  
(Zajednički seminari Zavoda za teorijsku fiziku,  
Zavoda za eksperimentalnu fiziku IRB-a i Fizičkog odsjeka PMF-a)

## Light window for right-handed neutrinos in the Left-Right symmetric model

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### Abstract:

Left-right symmetric models, introduced to explain parity violation of weak interactions, also offer an appealing solution to the problem of neutrino masses by naturally embedding the see-saw mechanism, with right-handed Majorana neutrinos being a crucial ingredient. Since current experimental searches set a lower limit on the left-right scale in a TeV range, accessible to the colliders such as LHC, there is a possibility to probe the Majorana nature of neutrinos using the so called Keung-Senjanović process, a high-energy analogue to the neutrinoless double beta decay. Study of a light window for right-handed neutrinos, an area of parameter space where LHC reach is not yet assessed, presents some challenges related to the Monte Carlo simulations of the Keung-Senjanović process, with the main problem being the numerical instability of the general-purpose Monte Carlo simulation software. After a brief discussion of the model, the main part of the talk will be the Keung-Senjanović process, its most important features, and the solution of the numerical problems in the form of the custom event generator. Some details of the event generator, its comparison to the existing software, and some preliminary results will also be presented.

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