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 i Zavoda za teorijsku fiziku PMF-a)

Determining the photon polarization of the $b \to s\gamma$ using the $B \to K_1(1270)\gamma \to (K\pi\pi)\gamma$ decay

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Vrijeme: **11:00 sati c.t.**
Mjesto: IRB, Seminar ZTF-a

Sažetak:

Recently the radiative B decay to the strange axial-vector mesons, $B \to K_1(1270)\gamma$, has been observed with rather large rate. This process is particularly interesting as the subsequent K_1 decay into its three body final state allows to determine the polarization of the gamma, which is mostly left- (right-)handed for $\overline{B}(B)$ in the SM while various new physics models predict additional right- (left-)handed components. A new method is proposed to determine the polarization, exploiting the full Dalitz plot distribution, which seems to reduce strongly the statistical errors. In order to obtain a theoretical prediction for this polarization measurement, it is necessary to understand the hadronic $K_1 \to K\pi\pi$ decay channel and its uncertainties. The strong decays of the K_1 mesons, namely the partial wave amplitudes as well as their relative phases, are revisited in the framework of the $^3P_0$ quark-pair-creation model. Then, the result on the sensitivity of the $B \to K_1(1270)\gamma$ process to the photon polarization is presented.

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