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Probing dark sectors with long-lived particles at BELLE II

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I will present a new search for light scalar singlets in rare meson decays. For tiny interactions, the scalar is long-lived at detector scales and decays into displaced pairs of leptons or light mesons. I will show that Belle II has a remarkable potential to probe scalars in the GeV range with couplings as small as 10^{-5} . The predicted sensitivity is higher than at the long-baseline experiments FASER and NA62. I will also discuss signatures of invisibly decaying scalars in rare meson decays with missing energy.

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