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Dark photon pair production via off-shell dark higgs at FASER

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FASER searches new long lived particles. We discuss the model in which we localize extra $U(1)$ symmetry and it is broken by dark higgs taking vacuum expectation value. We calculated FASER's sensitivity to dark photon from off-shell dark higgs decay numerically. We find that the sensitivity region can be spanned to unexplored region compared with other production process of dark photon. We also show the parameter space in which perturbative calculation is valid from unitarity of S matrix.

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