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Study of the influence of absorbed dose on scintillation properties of inorganic scintillators BaF2 and LYSO:Ce

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Inorganic scintillators BaF2 and LYSO:Ce are considered as candidates for use in the electromagnetic calorimeter of the Mu2e-II experiment. Doping BaF2 with yttrium allows to suppress its slow luminescence component but negatively impacts on radiation hardness of the crystal. In previous work we studied the influence of irradiation with fast neutrons on scintillation properties of the pure BaF2 and doped with 1, 3 and 5 atomic percent of ittrium. In this work we study the influence of gamma irradiation on the light yield,energy resolution and scintillation kinetics of pure and doped with ittrium BaF2 crystals and LYSO:Ce crystals. A special experimental setup with Peltier cooling of PMT have been created to perform this study and especially to study the scintillation kinetics of the samples with delayed coincidence metod.

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