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# Simulation of ToF performance of ECal MPD/NICA

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A cylindrical electromagnetic calorimeter with a length of 6 m and an inner (outer) diameter of 3.45 (4.6) m, composed of 38400 trapezoidal towers with a base of 4x4 cm2 and a length of 40 cm, is created to operate as part of the MPD detector of the NICA project. "Shashlyk"technology was used for tower development with 210 alternating layers of lead and a scintillator 0.3 and 1.5 mm thick, pierced with 16 wavelength-shifting fibers to collect light on a silicon photomultiplier. Calorimeters of this type can provide subnanosecond time resolution that can be used for neutron identification, background suppression, and separation of hadron and electromagnetic showers. Because of the complexity of the light collection process, the time response simulation of a calorimeter presents significant difficulties. In full, this task comes down to obtaining the distribution of energy release in scintillators, converting it into photons of blue light, collecting these photons on wavelength-shifting fibers, converting and capturing green photons in fibers, transporting them to a multipixel APD, shaping its output signal and registering with digital electronics. The current status of the simulation program is discussed, as well as the results of time measurements on the manufactured calorimeter modules using electron beam. This work was supported by the RFBR grant no. 18-02-40054.

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