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Study of the time evolution of hadronic and electromagnetic showers DMITRI DENISOV, NIKOLAI MOKHOV, SERGEI STRIGANOV, Fermilab — Precision time determination for particles detection is critical for future detectors including high energy and high luminosity colliders in order to reject substantial out of time backgrounds. Such backgrounds could be coming from beams radiation for electron or muon colliders or from additional interactions in the same bunch crossing for hadron colliders. We will present recent results, based on modern simulation tools, of the space-time evolution for electromagnetic and hadronic showers which are typically used to detect electrons and photons or jets in the collider experiments. Our results demonstrate sub-nanosecond time resolution for detectors with fine spatial segmentation which provides excellent potential for use of such detectors in the future experiments.

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