Presentation of Paolo Girotti
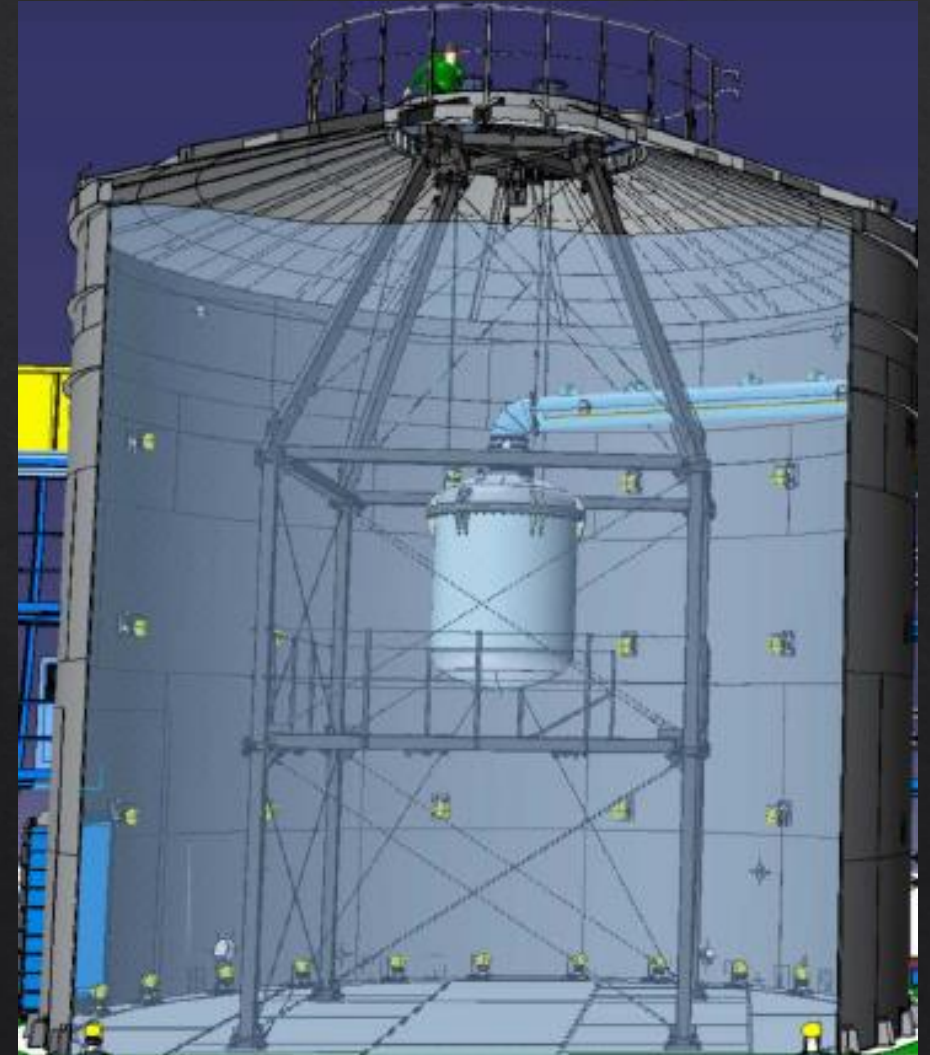
ISHEP 2017

University of Bologna

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XENON1T

Located at Gran Sasso (LNGS), XENON1T tries to detect directly the interaction of dark matter with a large mass of Liquid Xenon. Its detector is a dual-phase Xenon Time Projection Chamber (TPC), surrounded by PMTs. This cryogenic core is placed inside a 1000m^3 cylindrical water tank that acts as a muon veto.

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WIMPs are expected to weakly interact with the Xenon nuclei, losing energy by nuclear recoil and producing both scintillation photons and e-ion pairs.

The free electrons then move upward, driven by an electric field, reaching the gaseous section of the TPC. They then produce proportional scintillation.
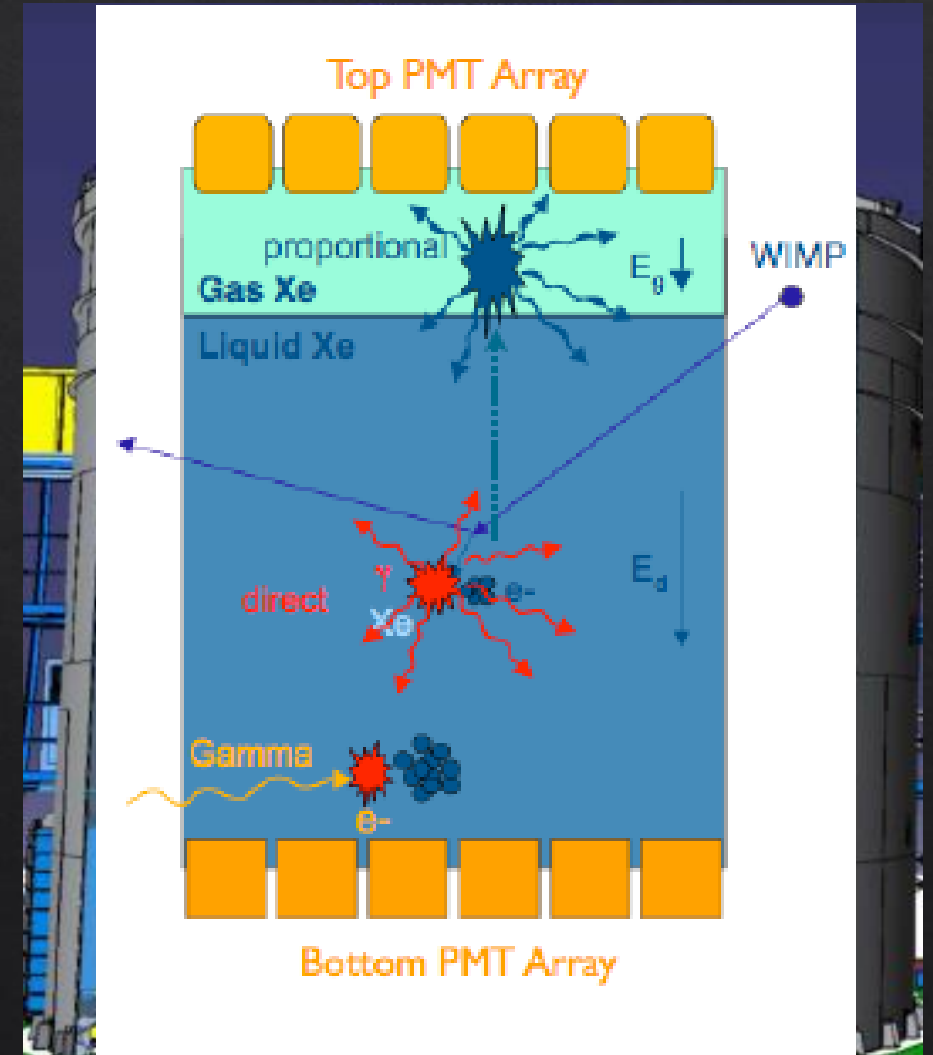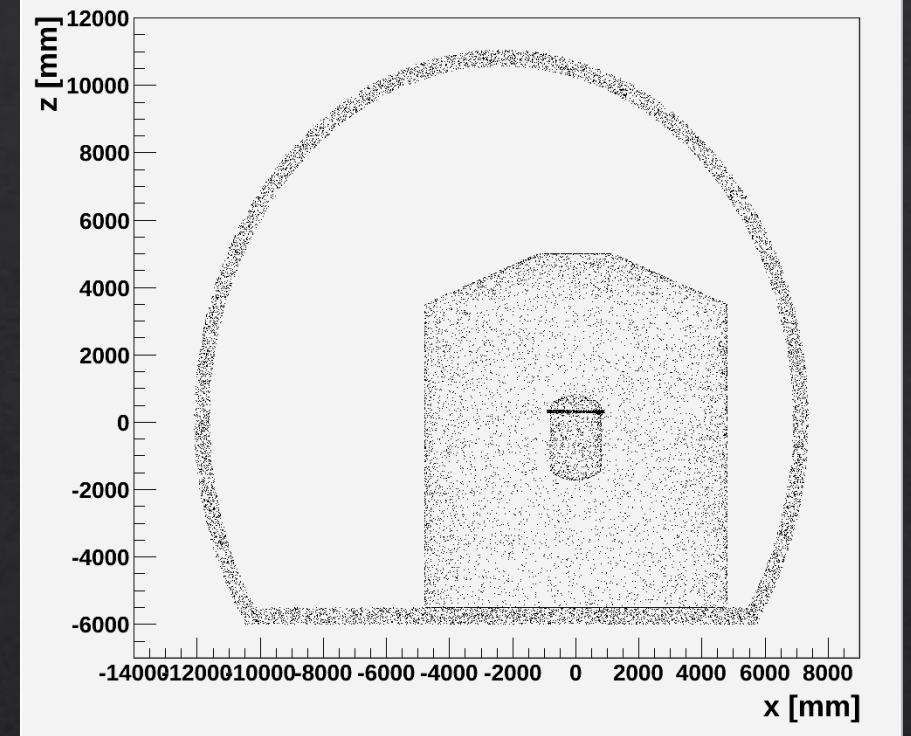
My work

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The simulation is programmed in C++ with the use of the GEANT4 toolkit.

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◈ The concrete-rock gallery containing the experiment

◈ The generation of a realistic muon shower based on real data
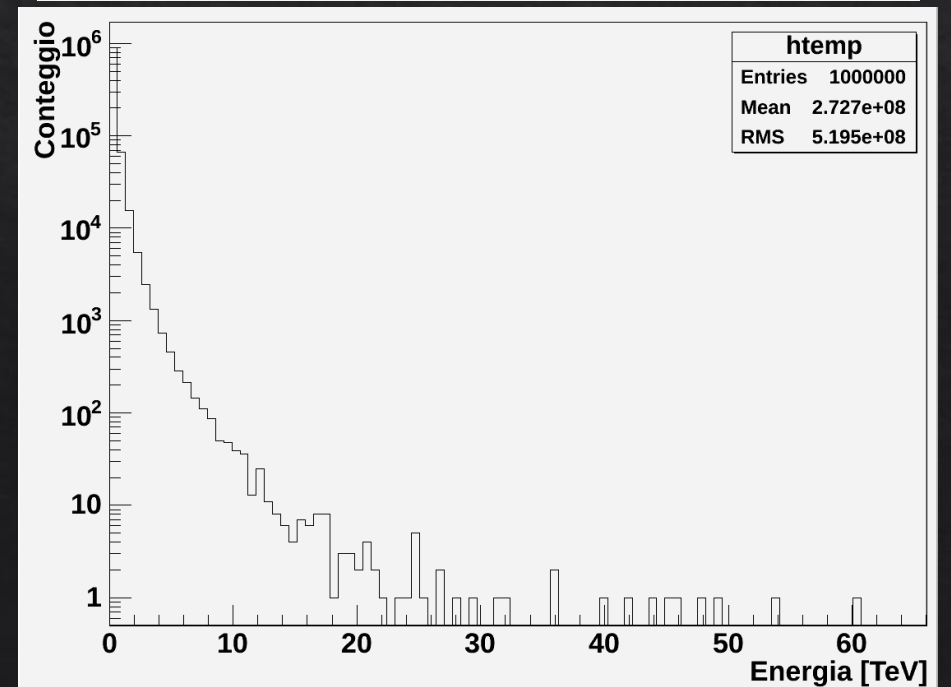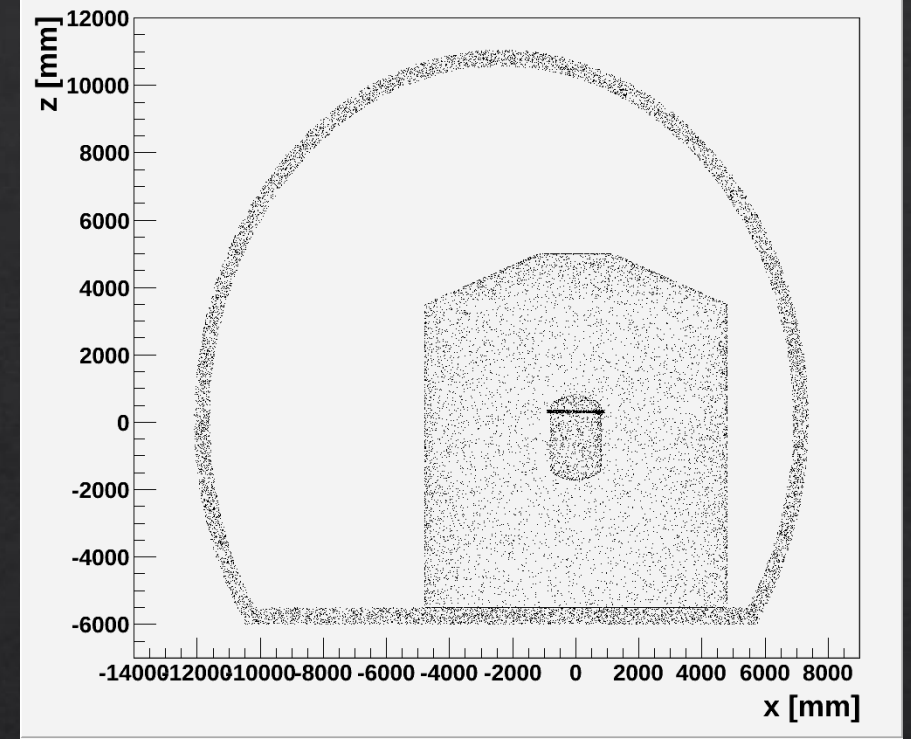
My work

I also made an event analyzer, capable of displaying muon events and data from the muon veto. Its main function is to show the Cherenkov photons detected by the muon veto PMTs as a function of time.
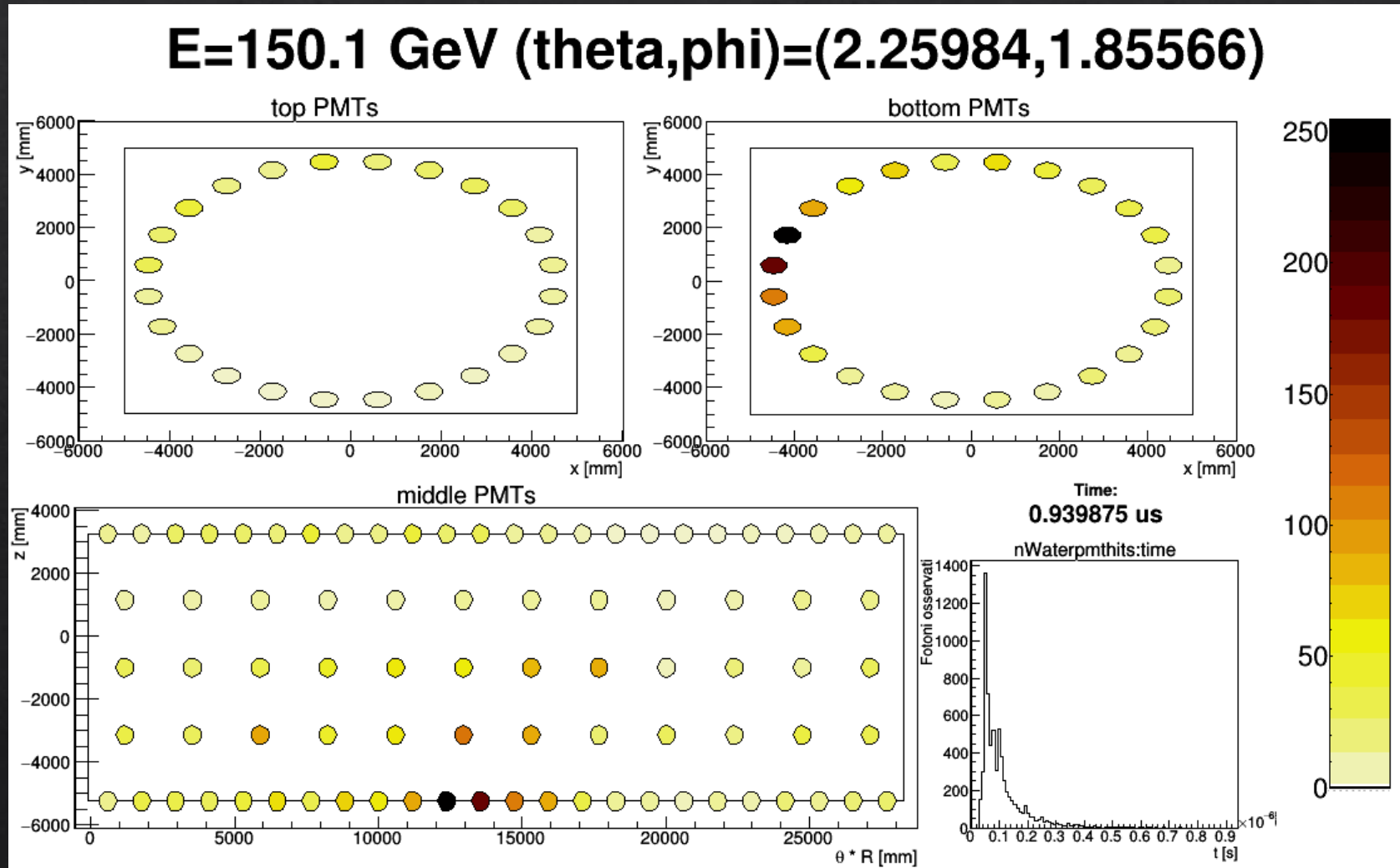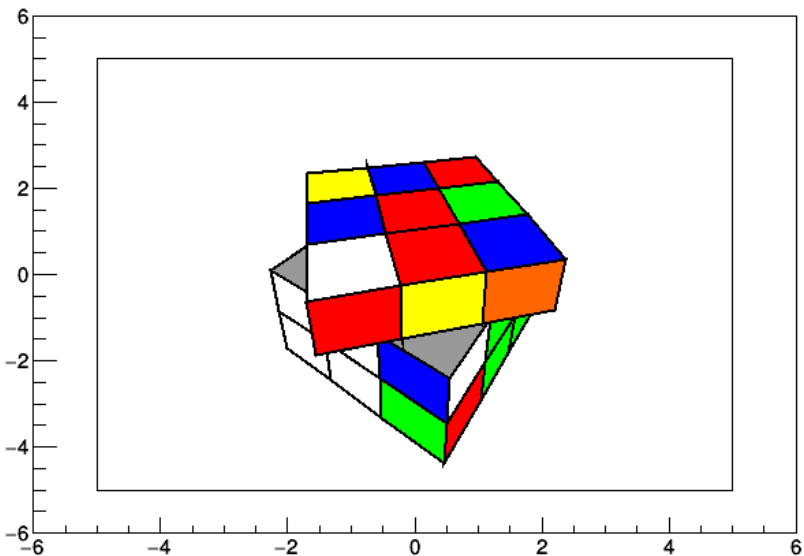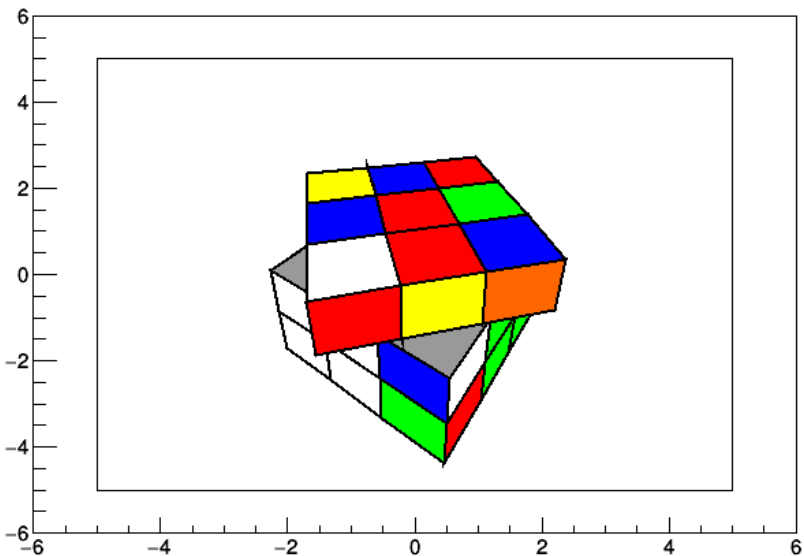
Not only this!

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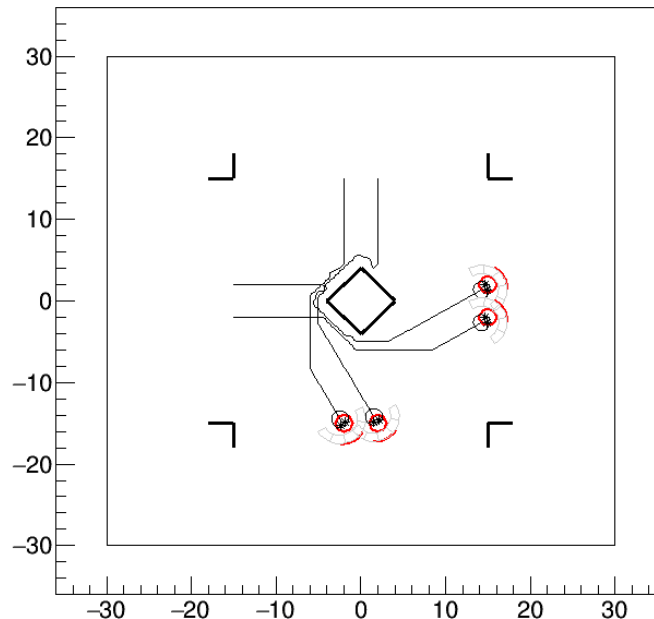
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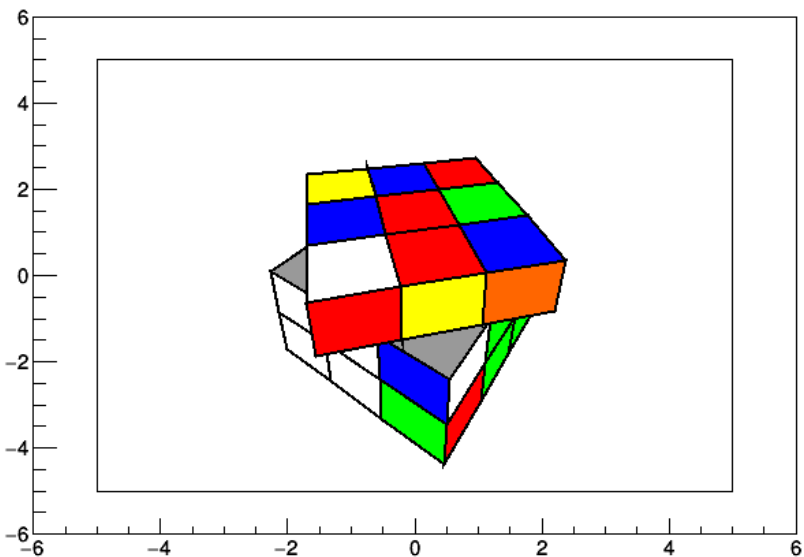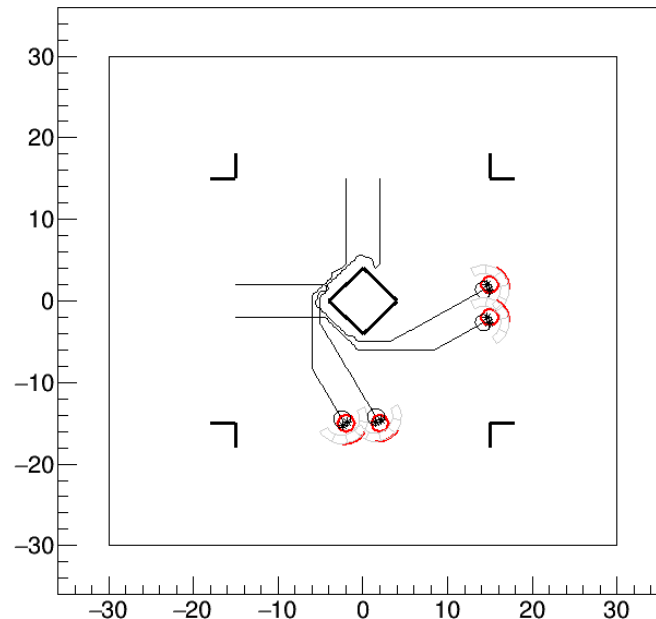
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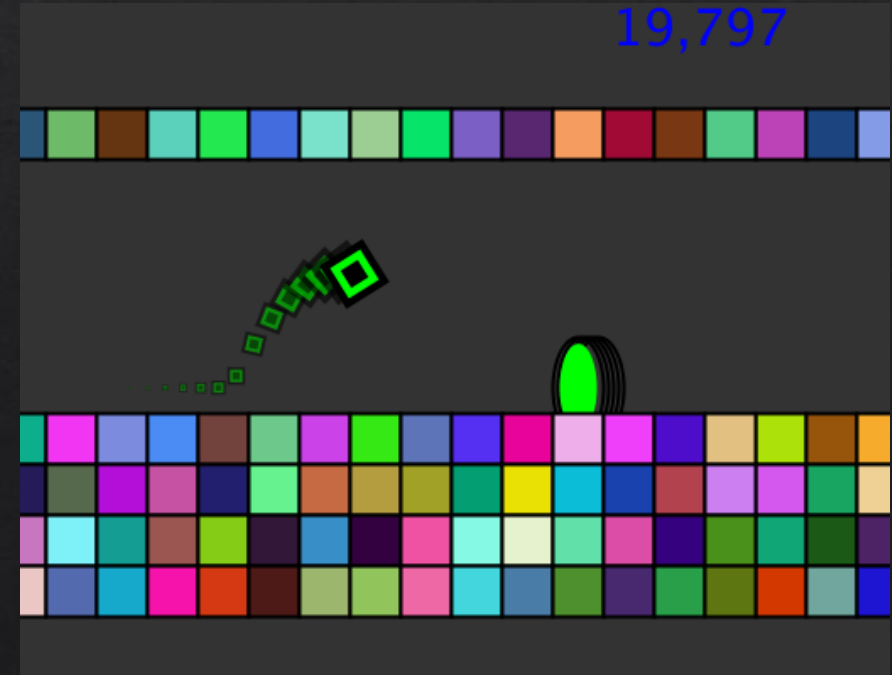◈ Several 2D games such as Arkanoid and Geometry Dash (using Processing)

Thanks for your attention