



GRANT

ERC: STARTING GRANT OF ALMOST 1.5 MILLION EUROS FOR THE SEARCH FOR DARK MATTER WITH THE POKER PROJECT

Andrea Celentano, researcher at the INFN Genoa Division, has been awarded an ERC Starting Grant worth 1.484 million euros, with the POKER (POsitron resonant annihilation into darK matter) project, dedicated to the search for light dark matter.

The objective of the POKER project, approved for 5 years from December 2020, is to study and demonstrate the feasibility of a light dark matter search approach, with measurements made by colliding an energy beam of positrons on a thick target. The idea on which the experiment is based is already implemented in other experiments like PADME at the INFN Frascati National laboratories, that is using accelerated positrons beams colliding with a target to produce light dark matter particles. To measure possible light dark matter signal events, POKER uses the "missing energy" technique. The detector is actually the target, capable of measuring, for each incident positron, the total energy left inside the target itself. In the case of background events, the entire energy of the incident positron is deposited in the target and in the active veto systems surrounding it. In the event of light dark matter production, on the other hand, the dark matter particles would escape from the detector, carrying a large portion of the energy of the incident positron: the energy measured by the active target would therefore be significantly lower than that of the beam. ■