Cosmic-Ray Extremely Distributed Observatory (CREDO) is a newly inaugurated, international project to organize the existing cosmic-ray infrastructure under one operational roof. It will enable an efficient global analysis of cosmic-ray data reaching the sensitivity to extremely extended cosmic-ray phenomena invisible for individual detectors or observatories. The inauguration meeting of the CREDO Collaboration was held at INP PAS on 30th August 2016, with around 50 attendees from 9 countries. The CREDO science case is focused on indirect search for Super Heavy Dark Matter through the observation of very large electromagnetic cascades initiated above the Earth atmosphere. Within the Super Heavy Dark Matter scenarios it is assumed that a production of supermassive (i.e. energy $\geq 10^{23}$ eV) particles could occur in the early Universe, during the inflation phase. Such particles could annihilate or decay presently, leading to production of jets containing mainly photons, including those of extremely high energies, even 10^{20} eV, or larger. Such photons could reach Earth unaffected or they might initiate electromagnetic cascades well above the Earth atmosphere. The latter option is presently a scientific *terra incognita*. Given the fundamental uncertainties about the physics in the considered energy range, one can not be sure about the properties of cascades intiated by extremely energetic photons or by other particles. Such cascades, called shortly super-preshowers, are considered within the CREDO strategy in a general way: without any assumptions about their properties, like e.g. spatial and temporal spread, energy spectrum of particles or the front shape. The practical question to be answered by CREDO is: what types of super-preshowers can be observed on Earth with the presently available infrastructure?

Fig. 1: The logo of the interantional collaboration named Cosmic-Ray Extremely Distributed Observatory (CREDO), organized with the initiative of INP PAS.

There is an obvious, although yet unprobed, „detection horizon" for super-preshowers. It can be located somewhere between an obviously detectable air shower induced by a super-preshower comopsed of tighly collimated particles (yet not observed), and obviously undetectable super-preshower composed of particles spread so widely that only few of them can reach Earth (cf. Fig. 2). CREDO will probe this super-preshower „detection horizon", leading either to an observation of a yet unseen physics phenomenon or to setting upper limits to the existence of large electromagnetic cascades. Each of the possible results will actually constrain the theoretical models dealing with the highest energy particles.

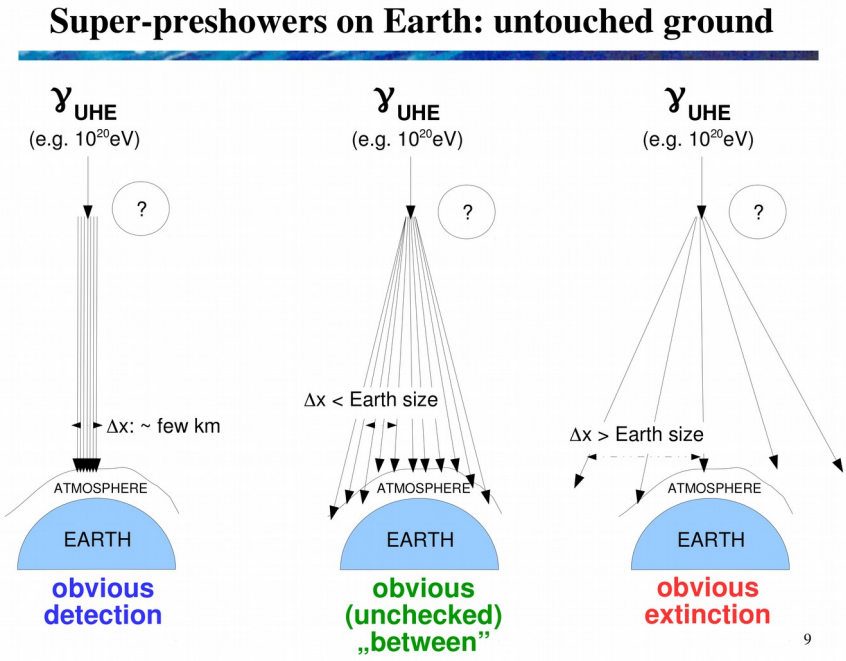

Fig. 2: A qualitative illustration of the unprobed potential of detecting large electromagnetic cascades (super-preshowers) with the available cosmic-ray infrastructure organized in a global netowrk. [P. Homola, plenary talk at the Pierre Auger Collaboration meeting]