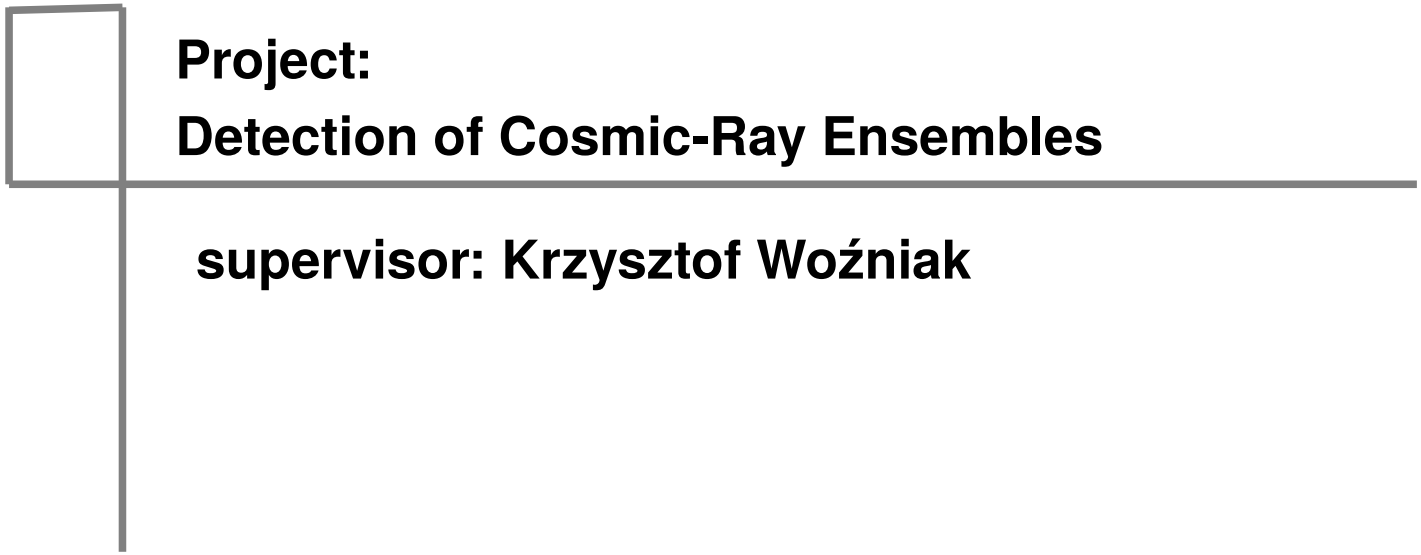


Project:

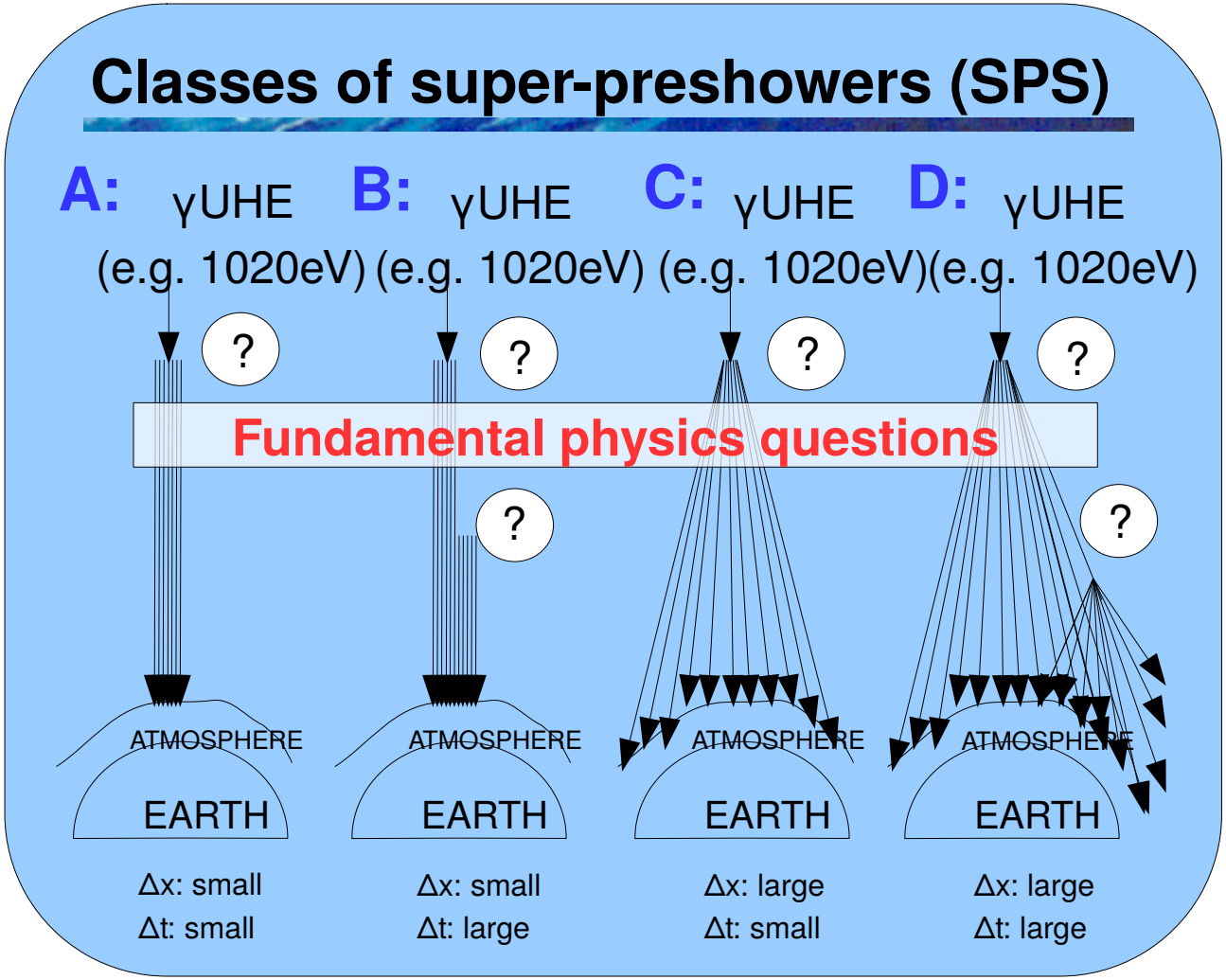
Detection of Cosmic-Ray Ensembles

supervisor: Krzysztof Woźniak

Cosmic Ray Super Pre-Showers

In some astrophysical scenarios, ultra high energy cosmic-ray particle (for example a photon) may interact far from the Earth produciong a Super Pre-Shower
Several classes of SPS are possible

SPS were not observed yet, mostly because currently working cosmic-ray observatories are optimized to register only single cosmic-ray showers of very high energy.

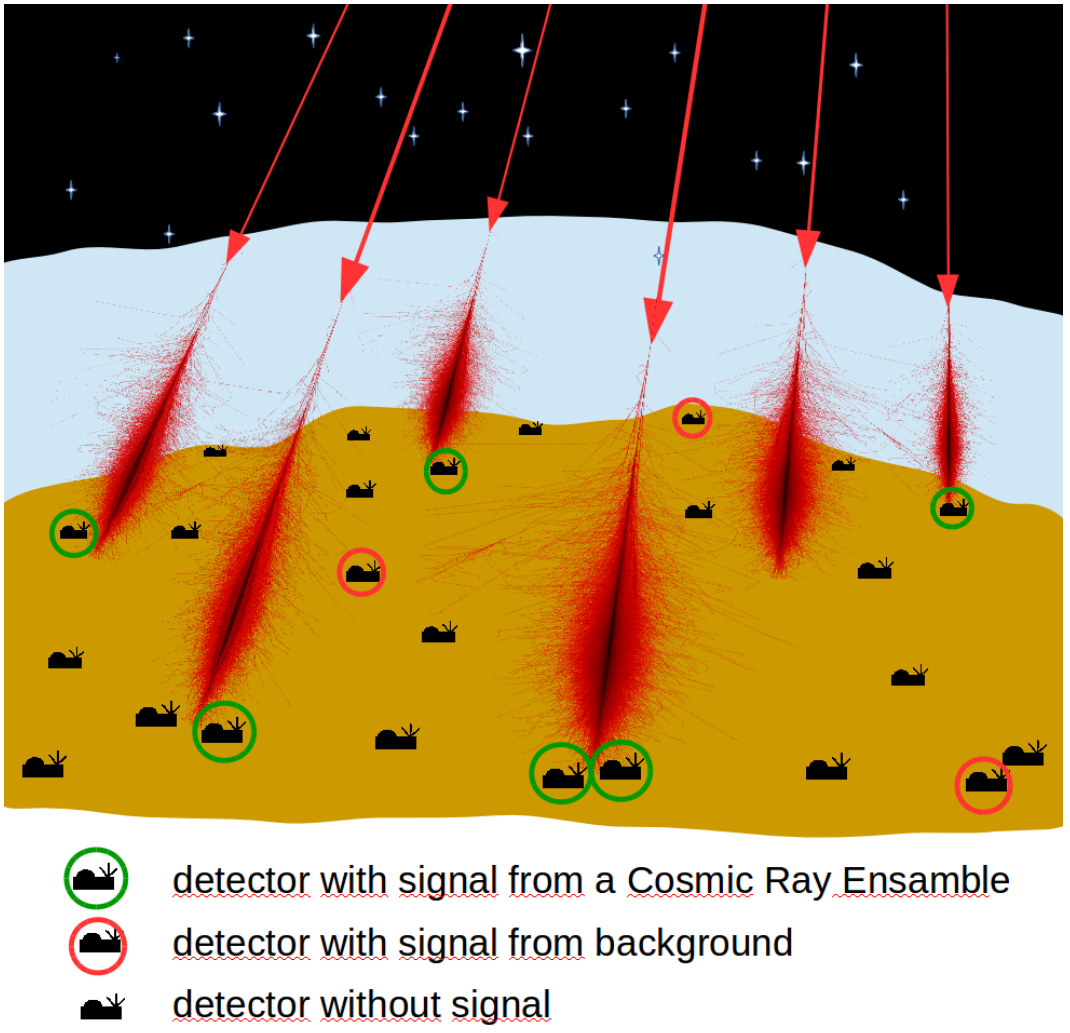


Cosmic-Ray Extremely Distributed Observatory

Cosmic-Ray Extremely Distributed Observatory is a project intended to search for SPS using detectors spread ober large area.

Detection of many signals of cosmic-ray showers correlated in time would be a sign of a SPS

Any detectors, even very simple, may contribute to such a study.



Cosmic-Ray Extremely Distributed Observatory

Cosmic rays may be detected even using a smartphone with the CREDO application. Data collected this way are stored in a central computer server for further analysis.

In this PPSS project simulations of cosmic-ray showers at different energies will be analyzed in order to determine the particle density on the ground. This information is crucial for calculation of efficiency of cosmic-ray shower detection using small and simple detectors.