



**What is this project all about?** Dark Matter and Dark Energy compose 95% of the Universe. What could it be that we can't see it? How about supermassive particles born in the early Universe? Let's call them X. Theorists say X particles would be good Dark Matter candidates. Moreover, although we can't see them directly, they could manifest themselves in a way accessible by terrestrial detectors. Even very simple ones - smartphones. X is very old, but not eternal. It might decay presently. We want to look for the products of this decay, photons of extremely high energies,  $10^{20}$  eV. This is the energy a well served tennis ball has. Or Mike Tyson hit in his good days. But remember, we are speaking about a single photon. What happens to such a photon on its way to Earth? We don't know. And the terrestrial accelerators will never let us know. One of the options is that such super-energetic photons have no chance to reach Earth unaffected. Due to some fundamental interactions they could initiate cascades of particles, mainly photons – of lower energies. We would chase these cascades which we call super-preshowers. Super-preshowers could be very much spread in space and time. So much that the current observatories can't see them. That's why we, scientists, are begging for your help. We need your smartphone, and we need many of you. You can be a part of a worldwide Dark Messenger detector. You will download an app, which will tell you once you encounter a cosmic particle. Then you need to take it seriously - this might be a member of a Dark Messenger Group. We verify it together: 50% of your enthusiasm for science and 50% of our scientific expertise – a perfect prescription for a fundamental scientific discovery.

**What will be the research?** We've already opened an international network of cosmic-ray devices, it just need to grow as much as possible. The network is called CREDO after Cosmic-Ray Extremely Distributed Observatory. „Cosmic-ray” means that we have the data for free and everywhere, no investments in accelerator infrastructure is needed. „Extremely Distributed” means that only the globe (and surroundings) can limit us – wherever the human technology can go, there we can also measure cosmic rays contributing to our Dark Matter strategy. „Observatory” means we are not doing an experiment: we just take what the Universe gives us and try to understand it. And finally CREDO in latin means „I believe” - all we have to believe that doing science, and in particular a very ambitious and fundamental science, which means asking fundamental questions and honestly looking for answers, is an obligation of the humankind: and in a sense it concerns all of us, not only scientists.

The CREDO network already yields the first data: images easily classifiable by non-scientists. We develop an interface between the world of scientists and the world of non-professional science enthusiasts: Dark Universe Welcome is the name of the internet application built on the [zooniverse.org](http://zooniverse.org) citizen science platform. Find us, watch us, and join us! You can contribute by downloading an application on your smartphone (find DECO or CRAYFIS) and by classifying images on Dark Universe Welcome. The more of you will employ your smartphone in science, the larger the network will grow and the more images will be sent for classification. And the more of you will classify images, the larger the chance to find a Dark Matter signature: a Dark Messenger Group. You might think we only need your smartphone and the pattern classification is only a nice phrase to collect more devices – everybody knows the machines do very well in pattern recognition. If you think so, please do not forget one simple truth about machine pattern recognition: machines need training sets to learn what pattern they are expected to identify. But we are looking for UNEXPECTED PATTERNS, no way to include them in the training sets if we have no idea how they should look like. That is why the human factor is critically important in our project. We, scientists, will simply not make it without your help.

**Why do we do this?** We don't know how you feel about our scientific ignorance, but for us, scientists, it is a very uncomfortable situation to have no idea what is the nature of the 95% of our surroundings. We simply can not live with this feeling. We understand that maybe not everybody cares and that there are other problems in this world. But what can we do if not doing our job as good as we can – asking questions and looking for answers? What we can do, we can do our job sparingly. That is why we do not ask you for new billions of dollars for our wonderful project. Instead we just ask you: hey, wait a second – why don't we try doing together a fundamental scientific test with the infrastructure we already have at hand or around us? This is the essence of the CREDO strategy and the main goal of this proposal. We will just „press the button”, open a completely new window to the Universe and see what is coming to us. Would be good if you are tuned when we realize we see the Unexpected.