simultaneous detection of two ∼TeV photons - new channel for DM search

anna bożena kowalewska

CREDO Visegrad Workshop 2019,
Silesian University in Opava

High Energy AstroPhysics

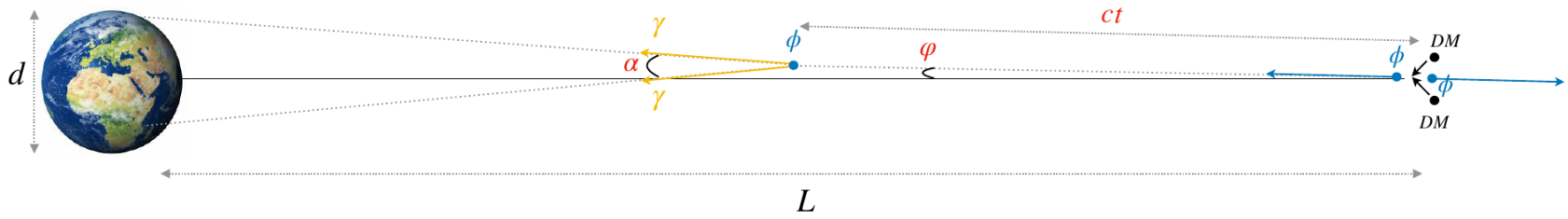
Why:

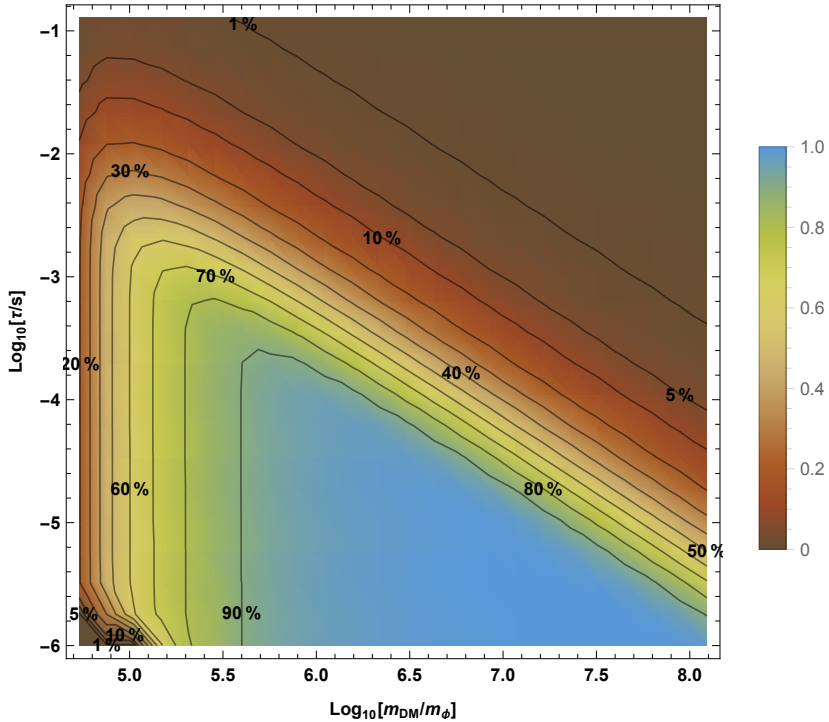
- the ground based accelerator experiments have not provided us with any clear signals of New Physics so far $\Rightarrow$ it becomes more and more prudent to turn to high energy astrophysics to look for new phenomena and signals of new particles

My focus:

- perform detailed study of the scientific reach of CREDO in search for Dark Matter $\Leftrightarrow$ CRE as a new indirect search for DM

simultaneous detection of two ∼TeV photons - new channel for DM search, perhaps feasible in CREDO ⇒ study if possible and what would be the reach for DM theories





The percentage of expected co-incident events for an example case of isotropic mediator decay originating from DM annihilation at the position of the Sun, normalized to the number of of single-photon events from an usual direct DM annihilation at the same position. Presented on a simplified model parameters plane of the rest frame lifetime τ in seconds and mass ratio m_{DM}/m_{ϕ}.

1. **Were there any studies done on the angular resolution of CREDO? If not, are they being planned?**
2. **Is there any potential for detected photon energy determination/estimate? If not, why?**
3. **Are there currently any ongoing DM analysis/ideas with CREDO? (I'd be happy to join and contribute)**

I would be grateful for any feedback and suggestions! If something comes to your mind later or you'd be interested in collaboration please feel invited to contact me: anna.kowalewska@ug.edu.pl

Thank you for your attention