Science case for a Wide Field-of-View Very-High-Energy Gamma-Ray observatory in the Southern Hemisphere

Harm Schoorlemmer, Miguel Mostafa, Segev Benzvi,
…and everyone that is interested

Goal & contents of a white paper…

1. *Collect all science applications in one document*
2. *No focus on detector development to keep it general*
3. *Use HAWC sensitivity as a "scalable" baseline to assess reasonable scenarios*
4. *Organize the community, if any observatory will be build, it will be most likely only one.*

Time line & Editing plans

- *Everybody is busy with ICRC… Get a version ready by the end of the Summer*
- *Everyone should and can contribute*
- *But limited number of editors (Segev, Harm, Miguel,…)*
- *Community wide signup*

SCIENCE CASE FOR A WIDE FIELD-OF-VIEW VERY-HIGH-ENERGY GAMMA-RAY OBSERVATORY IN THE SOUTHERN HEMISPHERE

HARM SCHOORLEMMER, MIGUEL MOSTAFA, SEGEV BENZVI,
AND YOUR NAME CAN BE HERE...

Contents

Today

1. *Discuss & Record science topics*
2. *Three sessions organized by topic. Within a session we can split up to work on subtopics.. Write something down. So we can report on it the next day and have a starting point for the text in the white paper.*
3. *Discussions don't need to have conclusions, but think about how to move forward (who are the experts to contact, what study is needed, etc etc)*

When thinking about the science case, keep the following in mind

Be optimistic & realistic

1. *CTA will be operational, which will have superior direction reconstruction, background rejections, and energy accuracy. CTA telescopes have wider field-of-view that current IACTs https://www.cta-observatory.org/science/cta-performance/*
2. *Why the Southern Hemisphere? What are the sources on that part of the sky?*
3. *How do we perform with respect to HAWC? and LHAASO?*
4. *In case of 0 detection today, preferably do not talk about N-detections in the future. But rather specify what model(s) will be constrained*

Some first thought on topics

Galactic γ-ray astronomy

PeVatrons

Geminga's

?

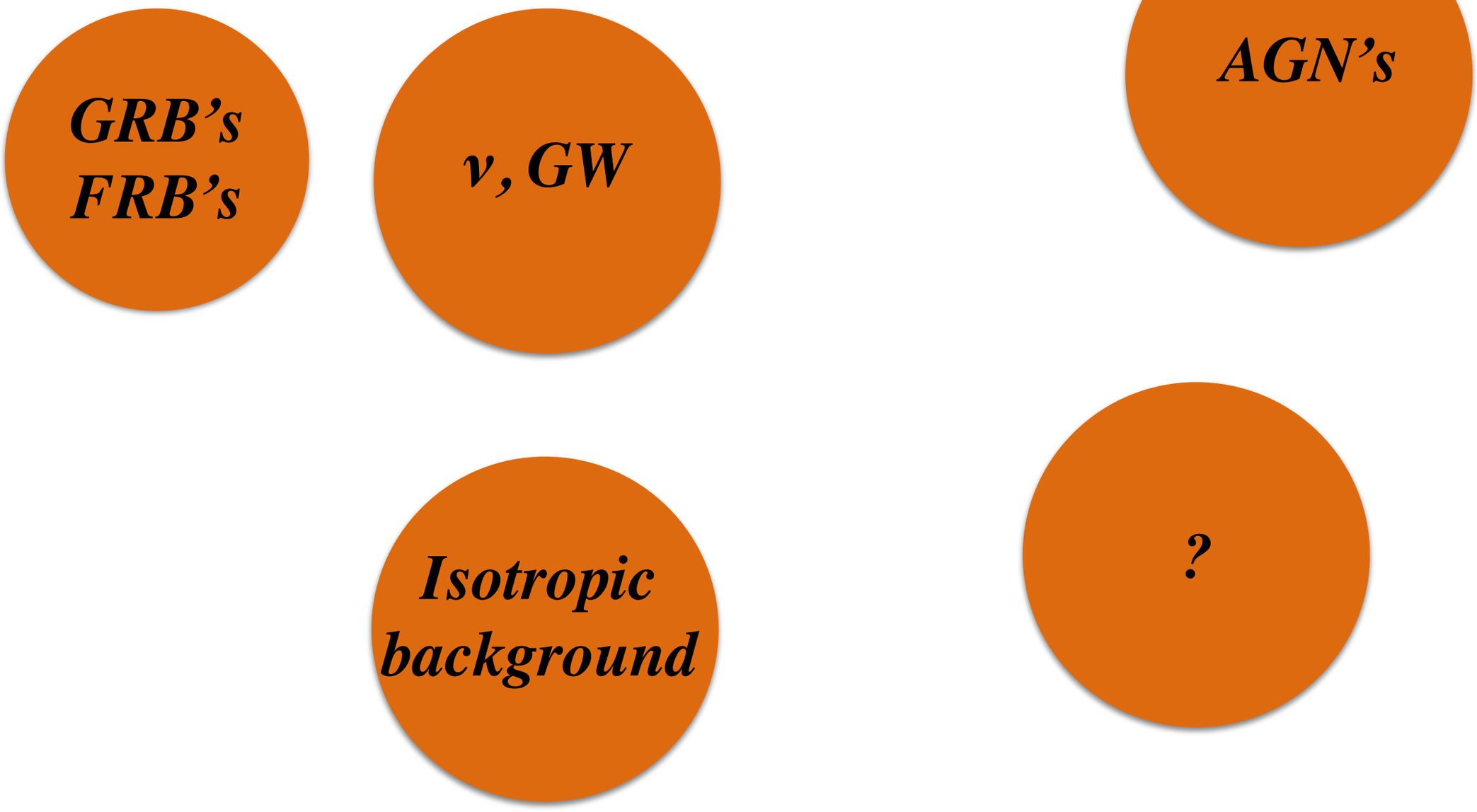
Extended emission

Variability

Some first thought on topics

Extra-galactic γ-ray astronomy

"multi messenger"



Some first thought on topics

Other

related to gemingas
& identifying astrophysical foreground

Dark Matter

Axions

?

Cosmic rays

Charge Ratio's
Anisotropy
Composition & Flux

Lets do some work!