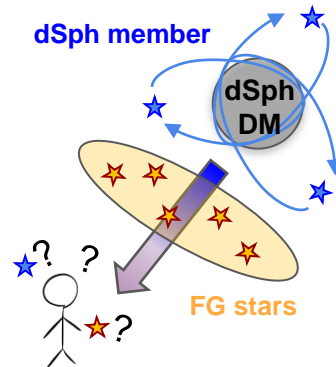


# J-factor Estimation of Draco, Sculptor and Ursa Minor dSphs with the member/foreground mixture model

Shunichi Horigome

Collaboration with K. Ichikawa, M. N. Ishigaki, S. Matsumoto, M. Ibe, H. Sugai, K. Hayashi  
[arXiv:1608.01749, arXiv:1706.05481, arXiv:1911.XXXX]

- **Dwarf spheroidal galaxies (dSphs)** are important targets for the indirect detection of dark matter (DM).
- To predict the signal flux ( $\gamma$ -ray) from dSphs, we need to know their **DM distributions**, which are estimated by observing the motion of **dSph member stars**.
- However, it is known that **foreground stars** contaminate the data, leading to the incorrect result of the estimation.



- We proposed a new analysis based on the **mixture model** of the **dSph member** and **foreground** stars.
- In contrast to past studies, our method allows us to estimate the DM distribution in a simple and proper statistical way without a systematical uncertainty.
- Using this method, we have estimated the **J-factor**  $= \int_{\text{dSph}} dV (\text{DM density})^2$  of various dSphs.

