

# Atomic Dark Matter Capture in the Earth- the Global Picture\*

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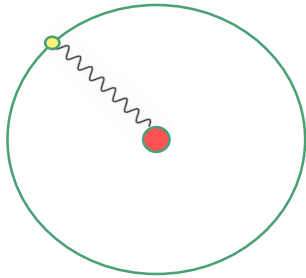
\* Pun Intended

Speaker: Keegan Humphrey - University of Toronto

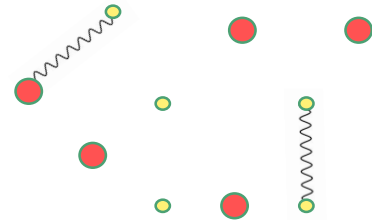
Ongoing work in Collaboration With: David Curtin, Zackaria Chacko, Ina Flood, Michael Geller, Yuhsin Tsai

# What is aDM?

$$\mathcal{L}_{aDM} = -\frac{1}{4}F_{D\mu\nu}F_D^{\mu\nu} + \bar{\psi}_{pD}(i\not{\partial} + q_D\not{A}_D - m_{pD})\psi_{pD} + \bar{\psi}_{eD}(i\not{\partial} - q_D\not{A}_D - m_{eD})\psi_{eD}$$

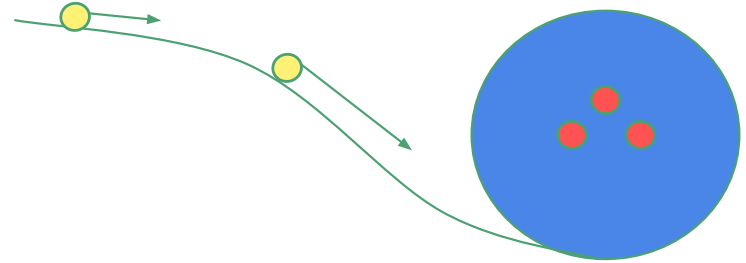
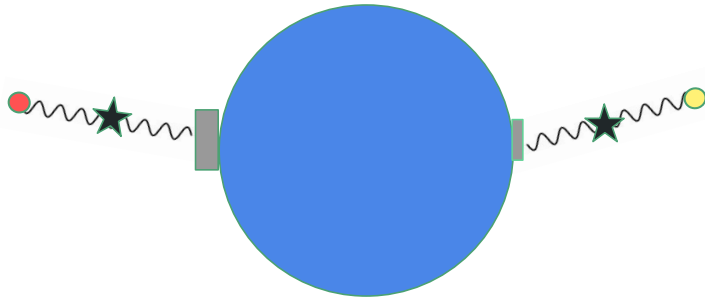


$$m_{eD} \ll m_{pD}$$

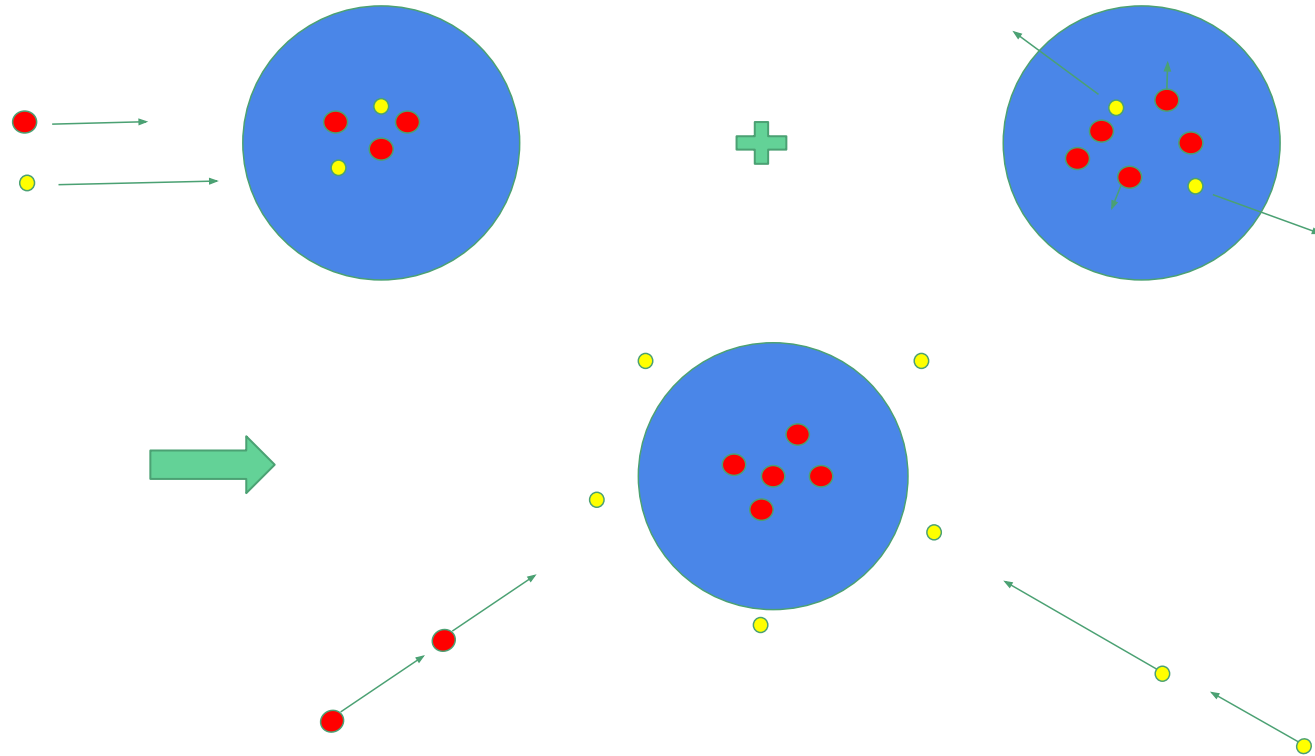


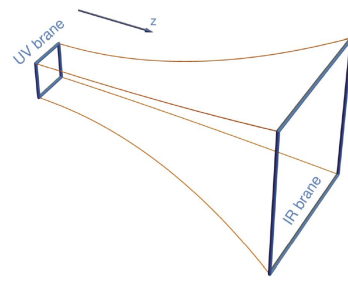
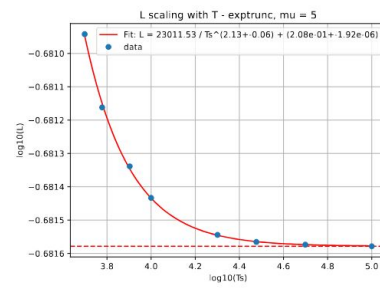
# How do we search for aDM?

$$\mathcal{L}_{mix} = -\frac{1}{4}F_{\mu\nu}F^{\mu\nu} - \frac{1}{4}F_{D\mu\nu}F_D^{\mu\nu} - \frac{\epsilon}{2}F_{\mu\nu}F_D^{\mu\nu}$$



# What happens to aDM near Earth?

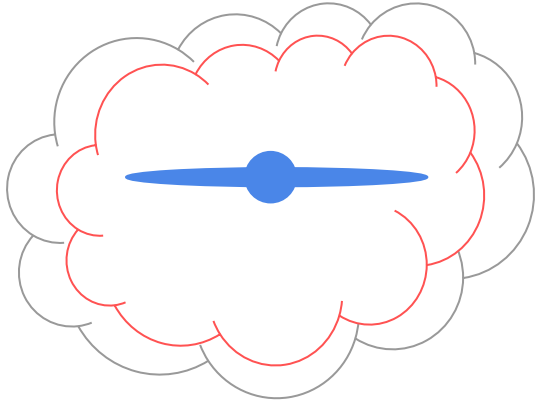




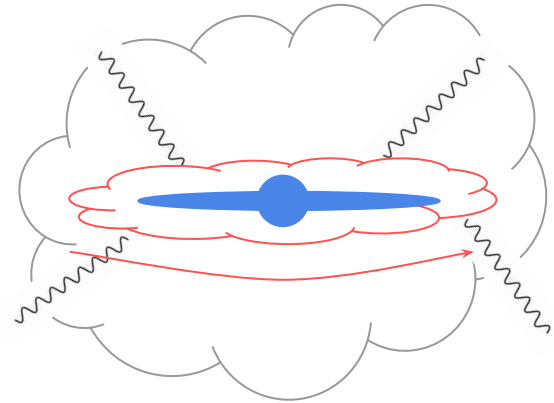
1811.04279

# What do you want to ask?

## Backup - How is aDM distributed in the Galaxy?



or



2304.09878

2311.02148