

# SABRE-Theory Workshop

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THE UNIVERSITY OF  
MELBOURNE



# Overall goal



- Create a platform where theorists and experimentalists can work out together SABRE's potential at testing new physics
- Identify those models/processes that can be tested with high sensitivity
- Publish a joint paper describing the physics to be tested with SABRE and expectations (SABRE white paper)

# 1<sup>st</sup> meeting outcome

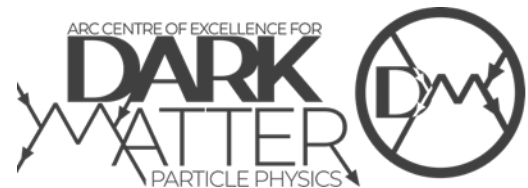


- <https://darkmatteraustralia.atlassian.net/wiki/spaces/SABREPUBLIC/pages/1194393638/Introductory+meeting>
- Characteristics and expected performance of the experiment detectors were presented
- Small overview of processes investigated by similar experiment
- Open discussion on processes that could be investigated with the SABRE experiment
- Four areas of study were identified:
  - Dark Matter Halo physics
  - Low energy direct detection
  - Boosted Dark Matter
  - Quantum Mechanics

# Today's goal



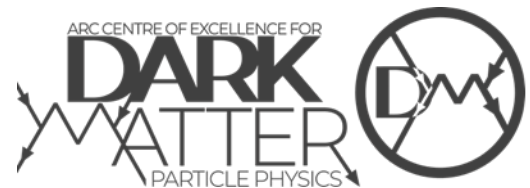
- Identify the resources for collaboration
- Agree on a timeline for the SABRE white paper publication
- Form working groups and nominate coordinators



# Resources



- Links to resources are provided in the email circulated just prior the start of this workshop



# Timeline



- Today:
  - definition of working groups and responsibilities
- 1<sup>st</sup> week of November:
  - Groups give an overview of the considered processes/models
  - Decide on the models to further pursue
- 16<sup>th</sup> December:
  - Present expected potential of the SABRE experiment to test the selected models
  - Provide an estimate of theoretical and experimental uncertainties on the measurement
- Early 2022:
  - Writing and Publication of the SABRE white paper





# Breakout rooms - points for discussion

- Introduce yourself and your expertise
- What is your knowledge of the group topic?
- Nominate coordinators (at least 1 theory and 1 SABRE)
- Think about the steps to undertake prior to the next workshop
  - Discuss frequency and dates for recurring group meetings
  - Understand time commitment of the group members
  - How to split tasks