

# Research interests Francesco Nuti

The University of Melbourne

26/11/2020

Dark Matter Centre 2020 Annual Workshop



THE UNIVERSITY OF  
MELBOURNE





# Introduction

## Position

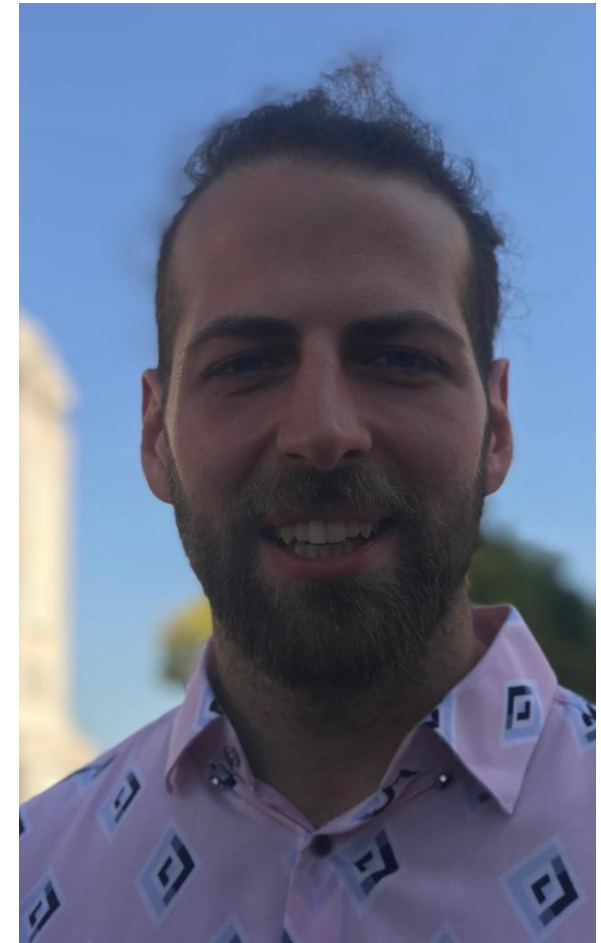
- Postdoc at the University of Melbourne since 2017

## Contact

- [francesco.nuti@unimelb.edu.au](mailto:francesco.nuti@unimelb.edu.au)

## Research Activity

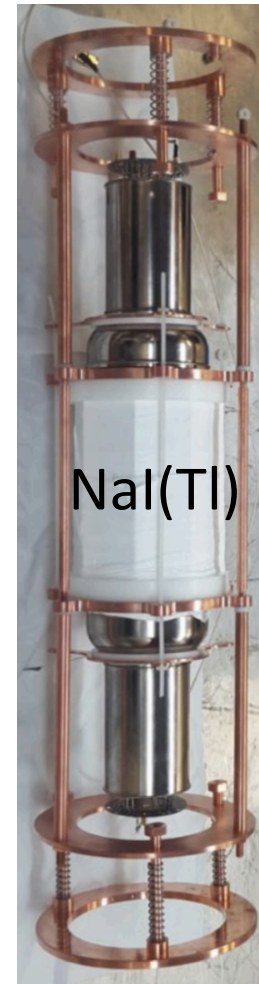
- Dark Matter detection with SABRE
- Radiation measurements for SUPL



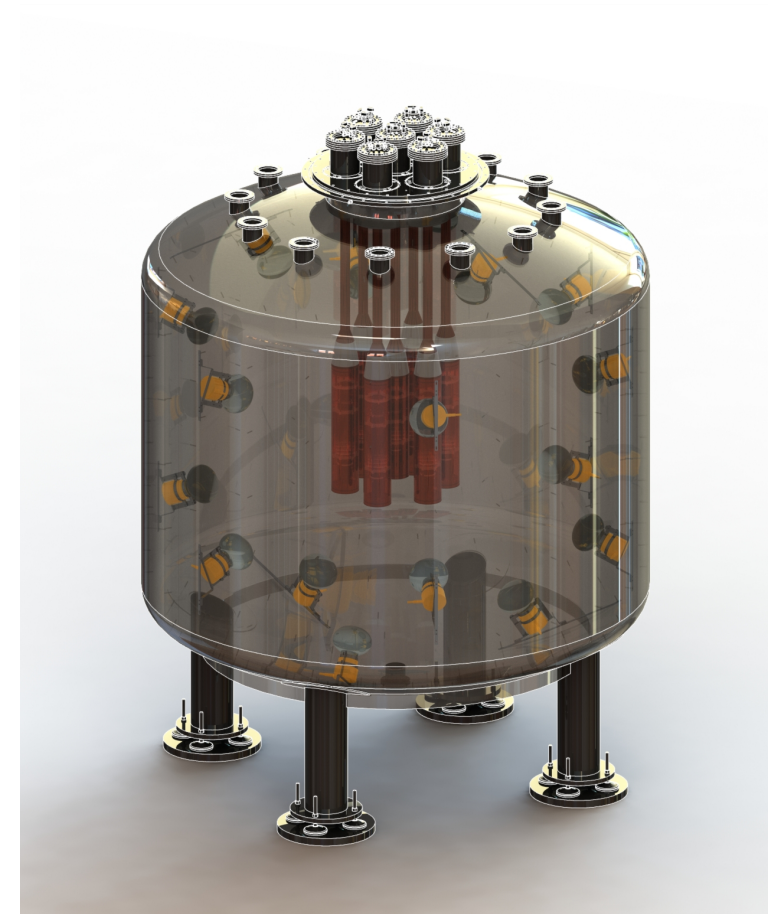


# SABRE

## Proof of Principle (PoP)

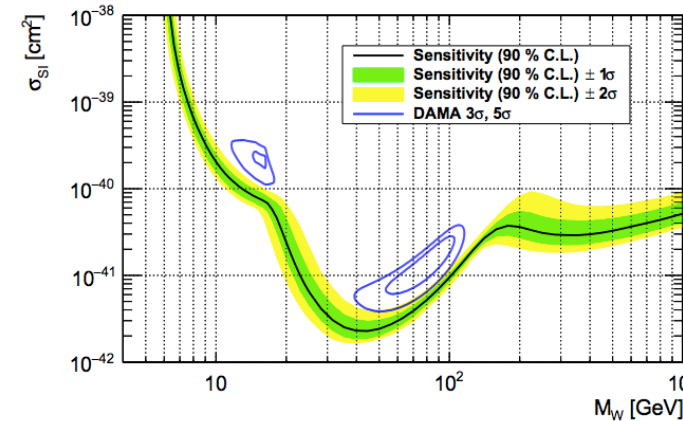
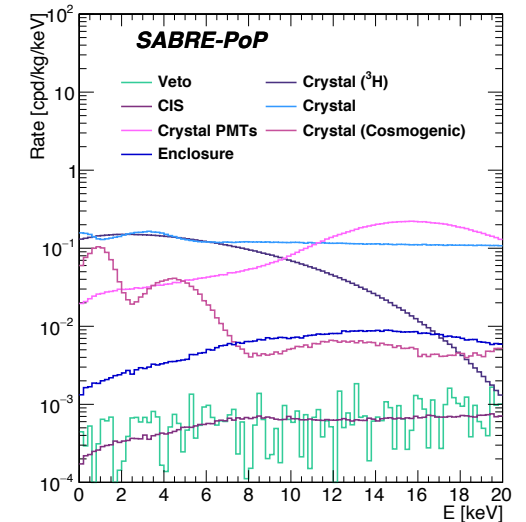
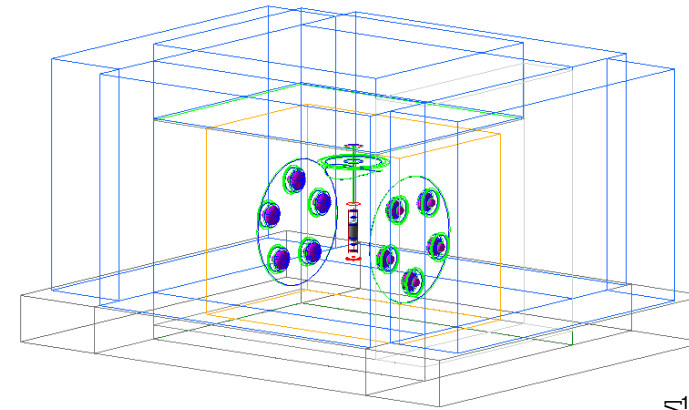


## South



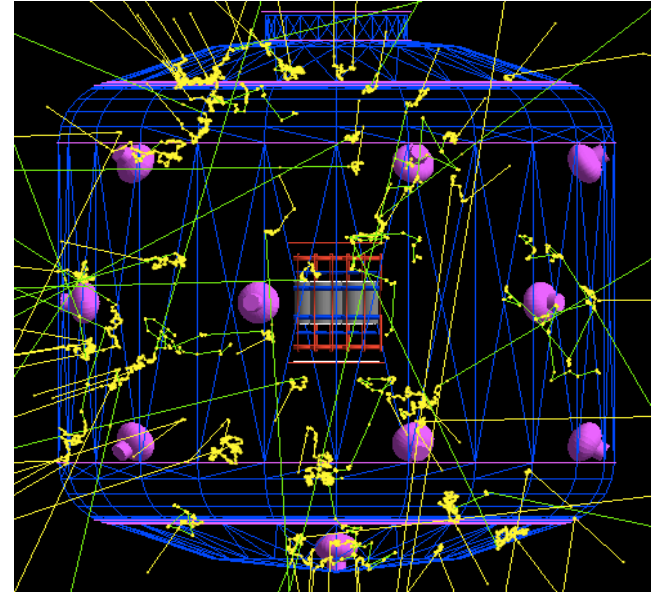
# SABRE PoP

- Background model based on simulation ([1806.09344](#))
- Expected sensitivity to WIMPs of a full experiment ([1806.09340](#))
- Expected sensitivity to quantum collapse models (on going)
- Analysis of the 2020 crystal data (on going)

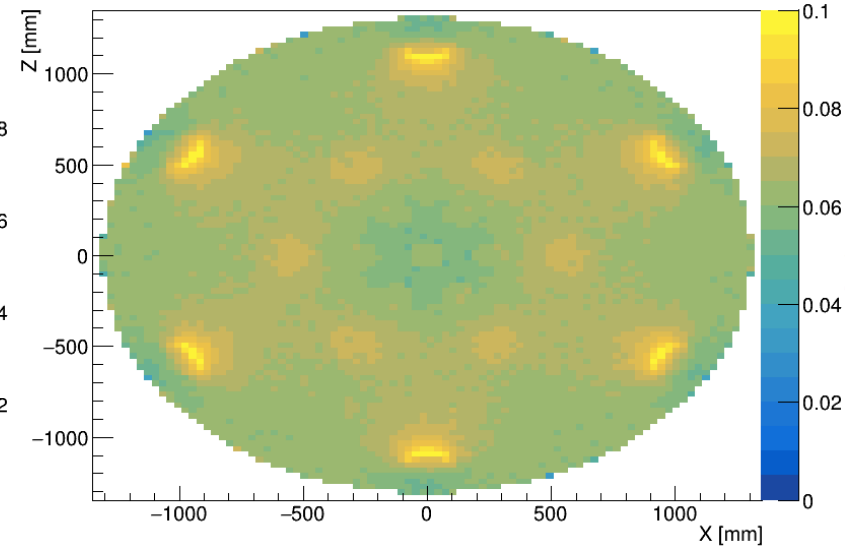
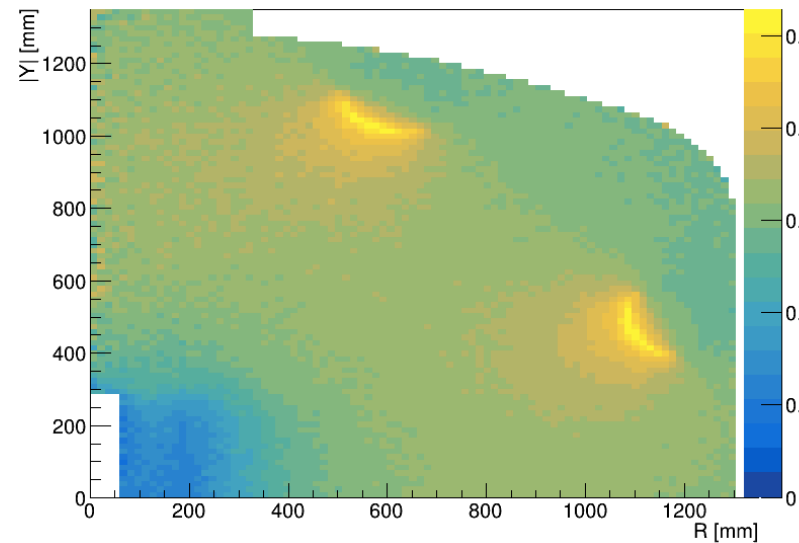


# SABRE South

- Coordinate the simulation studies
- Simulation Confluence page  
<https://darkmatteraustralia.atlassian.net/wiki/spaces/SABRE/pages/59572311/Simulation>
- Contribute to the experiment design
- Construction of a comprehensive background model of the experiment



Photon detection probability in veto







# Radiation testing

- Gamma ray detection with two NaI(Tl) crystals provided by ANSTO
- Measure SUPL site natural radioactivity
- Test radiopurity of materials for the construction of SUPL/SABRE

