

# CYGNUS Background Simulation

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CYGNUS Paper Meeting, March 15<sup>th</sup> 2017

# Summary of gamma simulations from readout materials

<u>Readout</u>	<u>Material</u>
GEMs	Copper, Kapton
MuPics	Polymid
Wires	Steel, Aluminium oxyde (ceramics), Acrylic
Pixel chips	Copper, Aluminium, Tantalum

# Muon Induced Neutrons

- Simulated muons at 2805 mwe in the salt rock at Boulby using MUSUN
- 5.9M muons corresponding to  $(2.00 \pm 0.07) 10^6$ s or  $23.15 \pm 0.08$  days
- Muons are also recorded in muon paddles either on the top of shield or on the sides
- 75cm of water shielding (from rock neutron simulation)

# Muon Induced Neutrons

- I only recorded 3 events in the region of interest (1-100keVr) so I will need better statistics
- No Muon Veto  
 $(1.3 \pm 0.8) 10^{-7} \text{Hz}$  ( $\sim 4/\text{year}$ )
- No improvement with just the top veto (small statistics)
- Top + Side Veto  
 $(8 \pm 6) 10^{-8} \text{Hz}$  ( $\sim 2.5/\text{year}$ )

# To Do

- Boulby rock gamma background
- LNGS simulation