Search for a Self Interacting Dark Mater at the CMS Experiment

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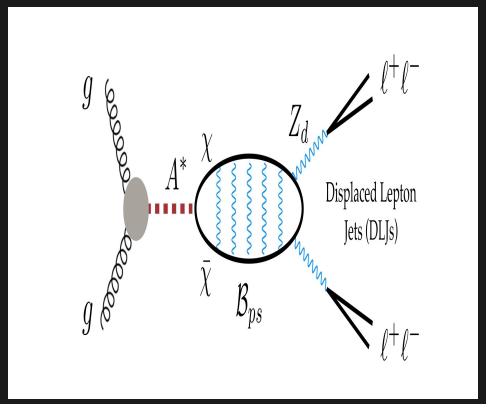
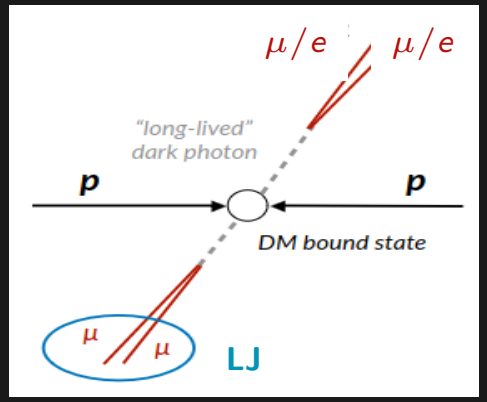
Self Interacting Dark Matter Model



1. Light $Z_d \rightarrow$ Boosted Z_d
2. Small Z_d - SM Coupling $\rightarrow$ Long-Lived Z_d

Displaced decays of boosted $Z_d \rightarrow$ Displaced, collimated leptons (Displaced Lepton Jets (LJs))



Free Parameters:

- Bound state mass (m_B)
- Dark photon mass (m_{Z_d})
- Kinetic mixing between Z_d and SM, ϵ

Reconstruction Objects:

- PF electrons
- PF Photons
- PF Muons
- DSA Muons

Signal:

- m_B: from 100 to 1000 GeV.
- m_{Z_d}: from 0.25 to 5 GeV.
- Z_d L_{xy}: from 0.3 to 300 cm.

Dark Photon p_T