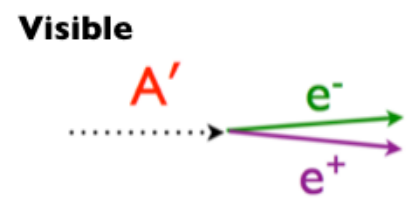


4 parameters: $m_\chi, m_{A'}, \epsilon, \alpha_D$
 $m_\chi, \sim m_{A'}: \text{MeV} - \text{GeV}$

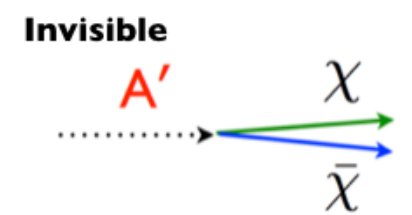
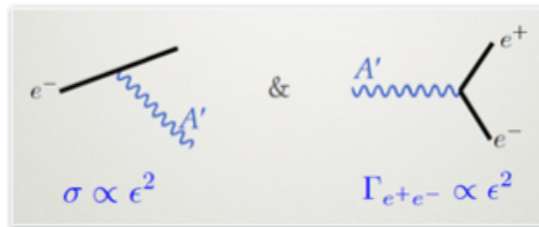
Invisible decay: positron annihilation on fixed target

Missing mass search:

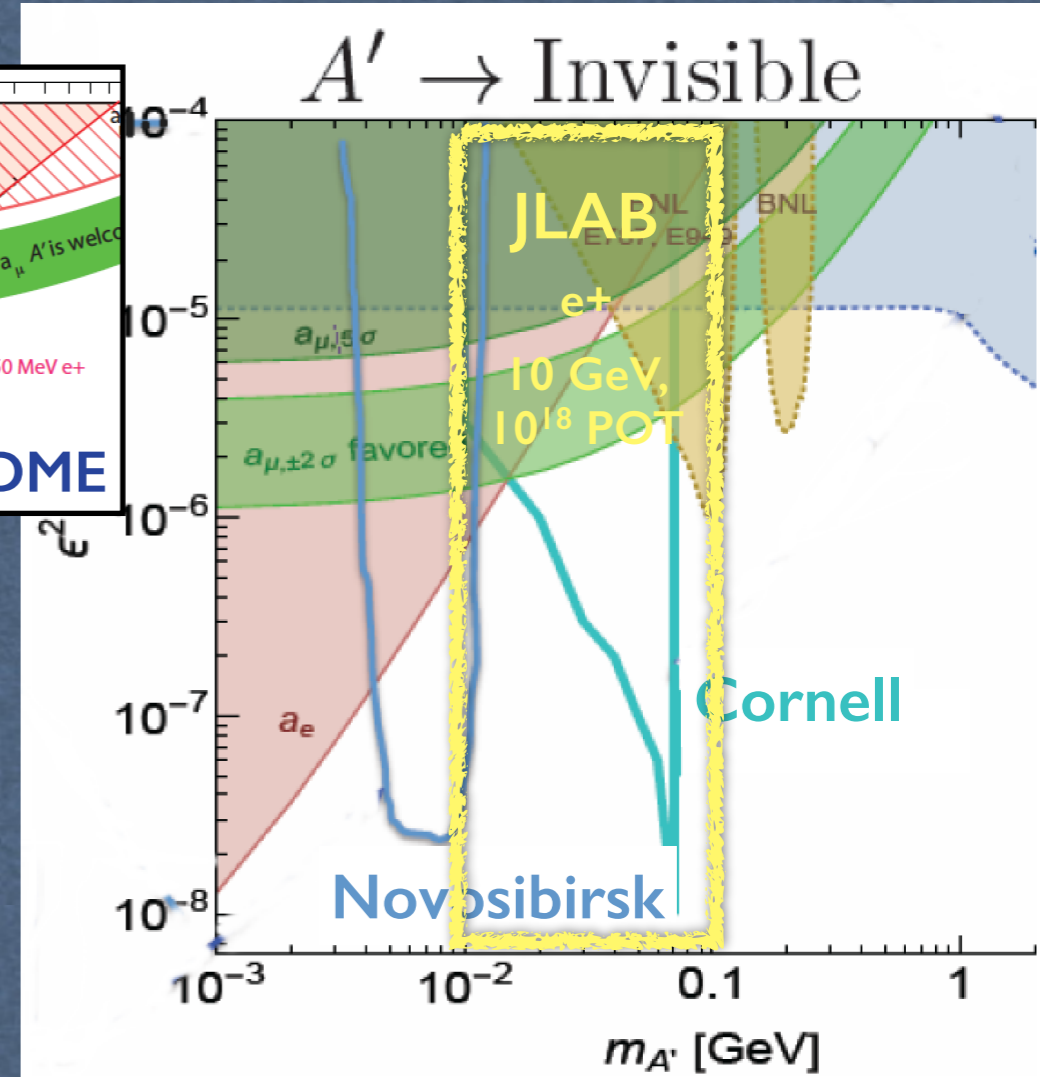
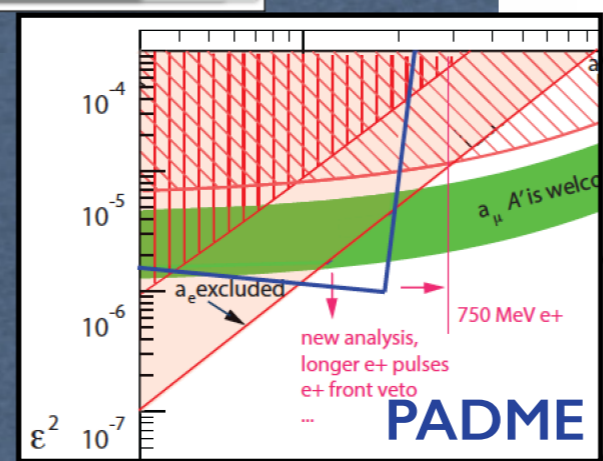
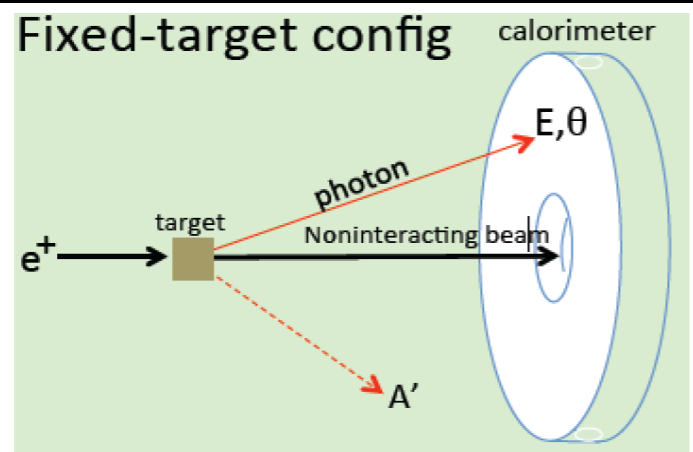
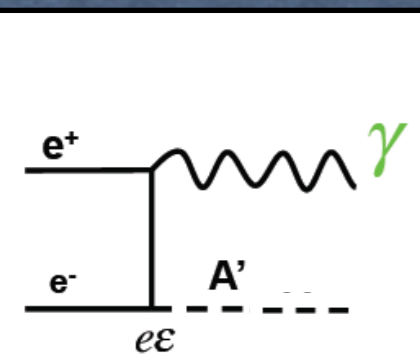
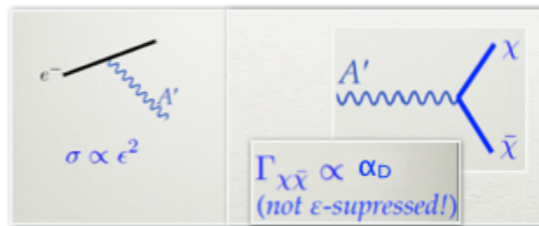
- Independent of A' decay mechanism
- Bump hunt (monophoton@collider)
- Need a positron beam
- Limited $M_{A'}$ accessible
 - 1 GeV beam: $M_{A'} < 31 \text{ MeV}$
 - 5 GeV beam: $M_{A'} < 71 \text{ MeV}$



- Minimal decay
- Decay regulated by ϵ^2
- Independent of m_χ
- Requires $m_{A'} < 2m_\chi$ (on-shell)



- Depends on 4 parameters
- $m_{A'} > 2m_\chi$ (on-shell)
- $\alpha_D = g_\chi^2/4\pi \gg \epsilon^2 \alpha_{EM}$



- LNF**
 - $E_{e^+} = 550 \text{ MeV}$
 - $EOT \sim 10^{13} - 10^{14} \text{ year}^{-1}$
- Cornell**
 - $E_{e^-} = 5.3 \text{ GeV}$
 - $EOT \sim 10^{17} - 10^{18} \text{ year}^{-1}$
- VEPP3**
 - $E_{e^+} = 500 \text{ MeV}$
 - $EOT \sim 10^{15} - 10^{16} \text{ year}^{-1}$

- JLab**
 - $E_{e^-} = 10 \text{ GeV}$
 - $EOT \sim 10^{18} \text{ year}^{-1}$
 - * The largest kinematic coverage
 - * The highest intensity