

$\tan \beta$

ATLAS

$\sqrt{s} = 13 \text{ TeV}, 139 \text{ fb}^{-1}, 95\% \text{ CL}$

2HDM+ a , Dirac DM, $m_\chi = 10 \text{ GeV}$

$\sin \theta = 0.35, m_A = 600 \text{ GeV}$

$m_A = m_H = m_{H^\pm}$

10

1

Expected limit ($\pm 1 \sigma_{\text{exp}}$)

Observed limit

ATLAS 36.1 fb^{-1}

$\Gamma/m_A > 20\%$

100 150 200 250 300 350 400 450 500

$m_a [\text{GeV}]$