

$$\left(\frac{M_{\text{baryons}}}{M_{\text{dark}}}\right)^2 = \frac{V_{\text{gas}}^2 + \Upsilon_{\star} V_{\star}^2}{V_{\text{obs}}^2 - V_{\text{gas}}^2 - \Upsilon_{\star} V_{\star}^2},$$