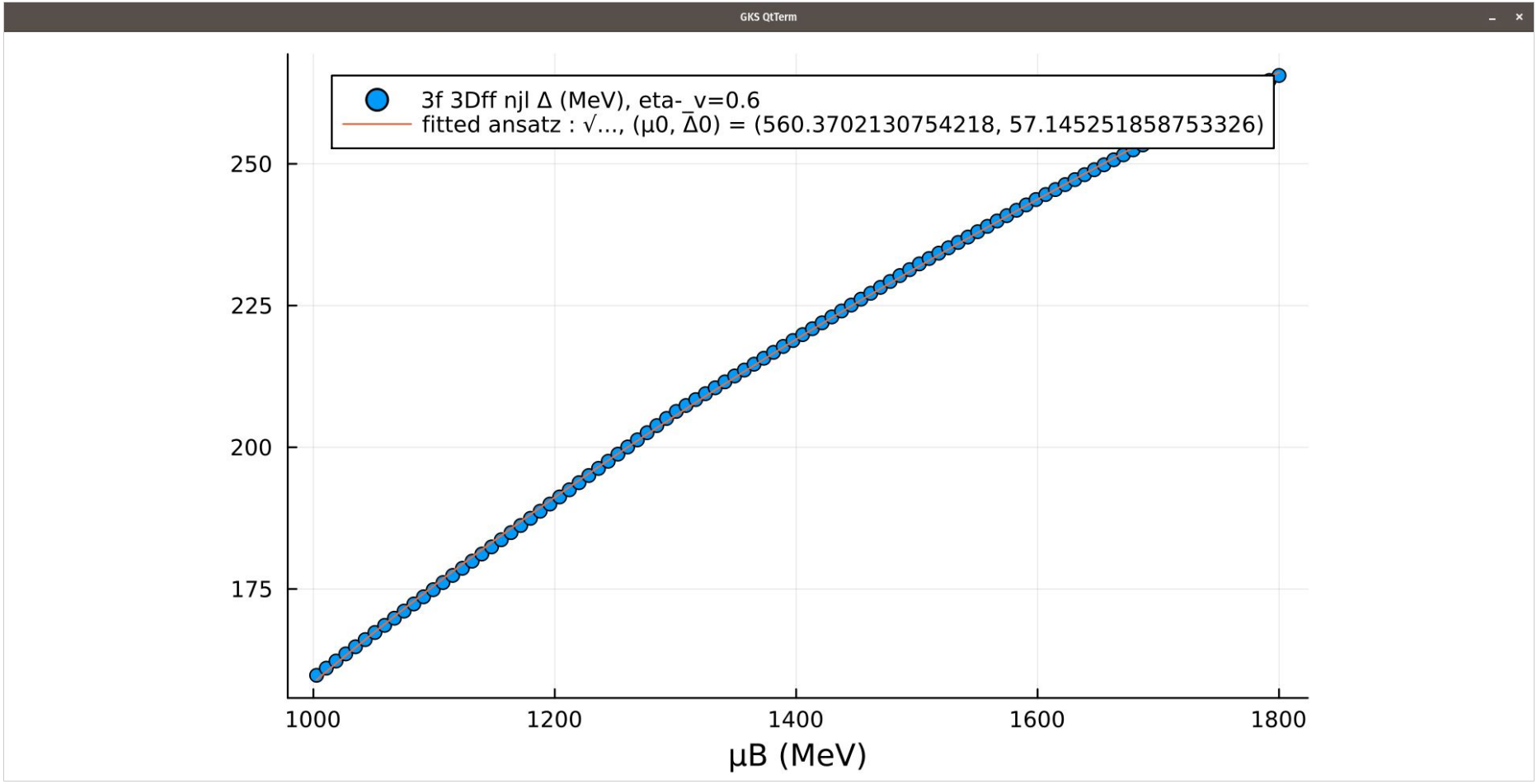
COMPRESSIBILITY ⟹ SPEED OF SOUND ⟹ STIFFNESS OF EoS

$$P_q(\mu) = \frac{3}{4\pi^2} a_4 \left(\frac{\mu}{3}\right)^4 + \frac{3}{\pi^2}\Delta^2 \left(\frac{\mu}{3}\right)^2 - B_{\text{eff}}$$

ANSATZ ⟹ $\Delta(\mu_B) = \sqrt{\Delta_0(\mu_B - \mu_0)}$


GKS QtTerm
3f 3Dff njl Δ (MeV), eta-_v=0.6
fitted ansatz : √..., (μ0, Δ̄0) = (560.3702130754218, 57.145251858753326)
250
225
200
175
1000
1200
1400
1600
1800
μB (MeV)

ABPR

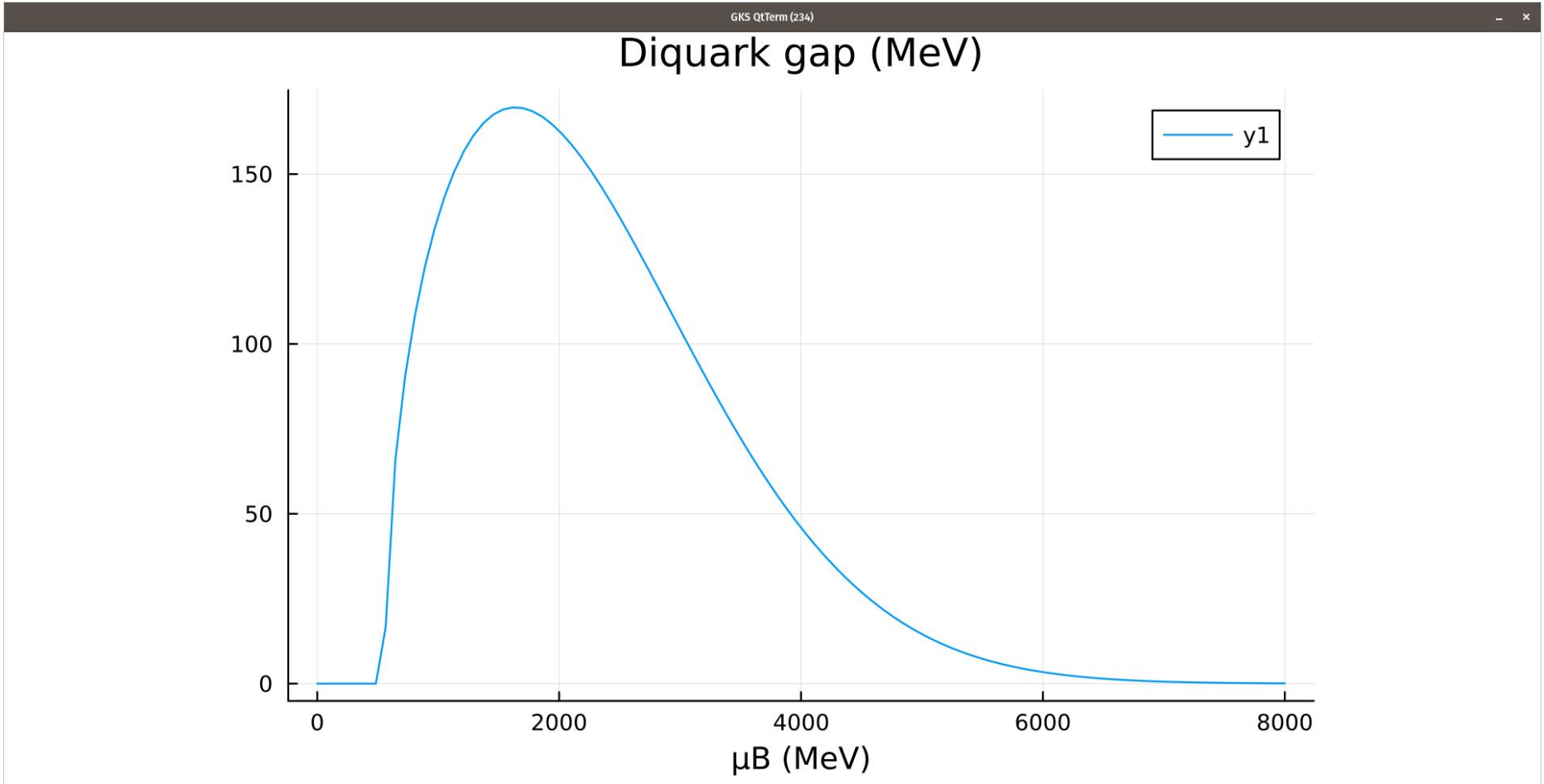
$$c_s^2 = \frac{1 + \xi(\mu_B)}{3 + 2\xi(\mu_B)}$$

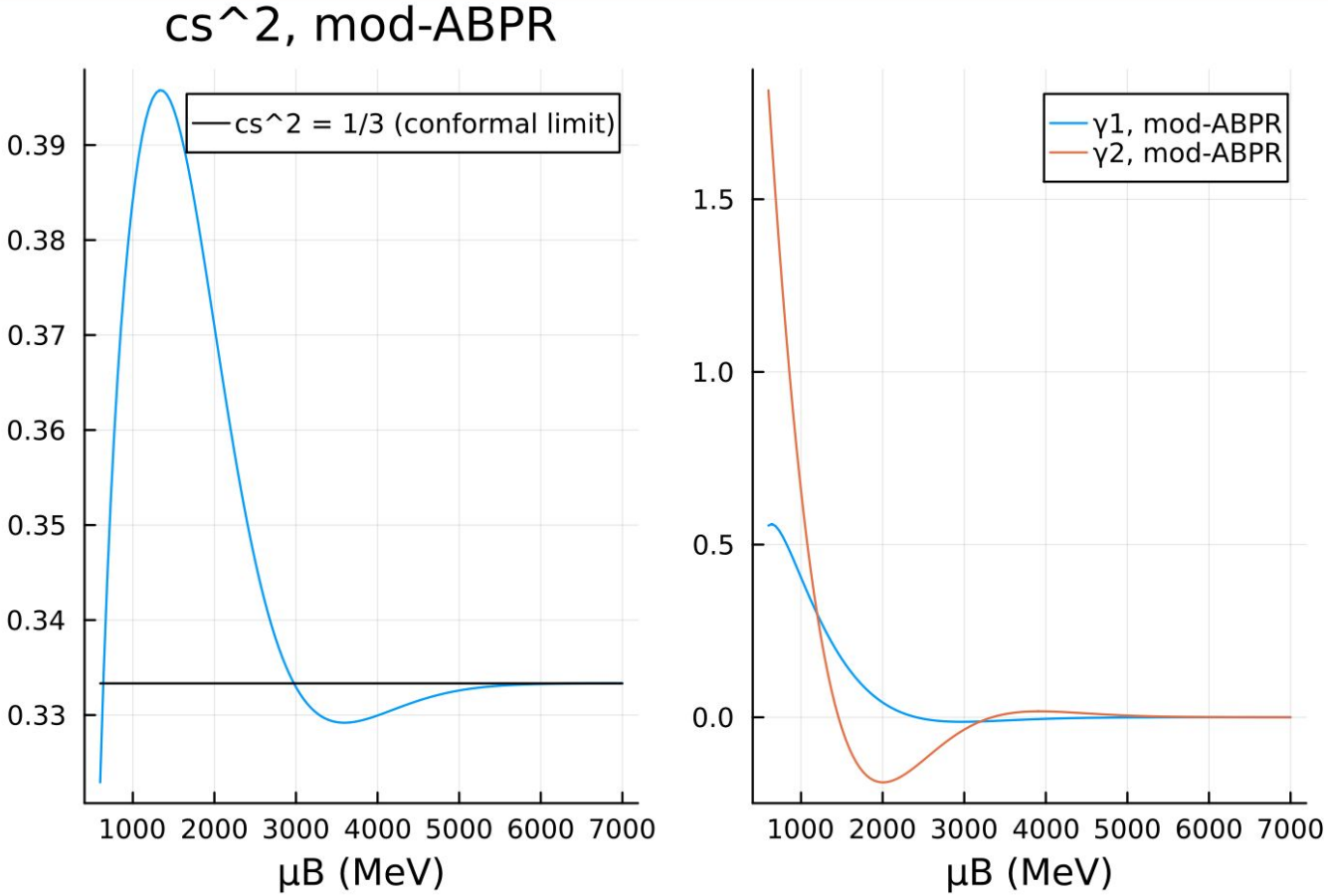
$$\xi(\mu_B) \propto \frac{\Delta_0}{\mu_B}$$

modified - ABPR

$$c_s^2 = \frac{1+\gamma_1(\mu_B)}{3+\gamma_2(\mu_B)}$$

$$\gamma_1, \gamma_2 \propto F\{\Delta(\mu_B), \Delta'(\mu_B), \Delta''(\mu_B)\}$$


GKS QtTerm (234)
Diquark gap (MeV)
y1
150
100
50
0
0
2000
4000
6000
8000
μB (MeV)


cs^2, mod-ABPR
cs^2 = 1/3 (conformal limit)
0.39
0.38
0.37
0.36
0.35
0.34
0.33
1000 2000 3000 4000 5000 6000 7000
μB (MeV)
γ1, mod-ABPR
γ2, mod-ABPR
1.5
1.0
0.5
0.0
1000 2000 3000 4000 5000 6000 7000
μB (MeV)