

Coherent phi production

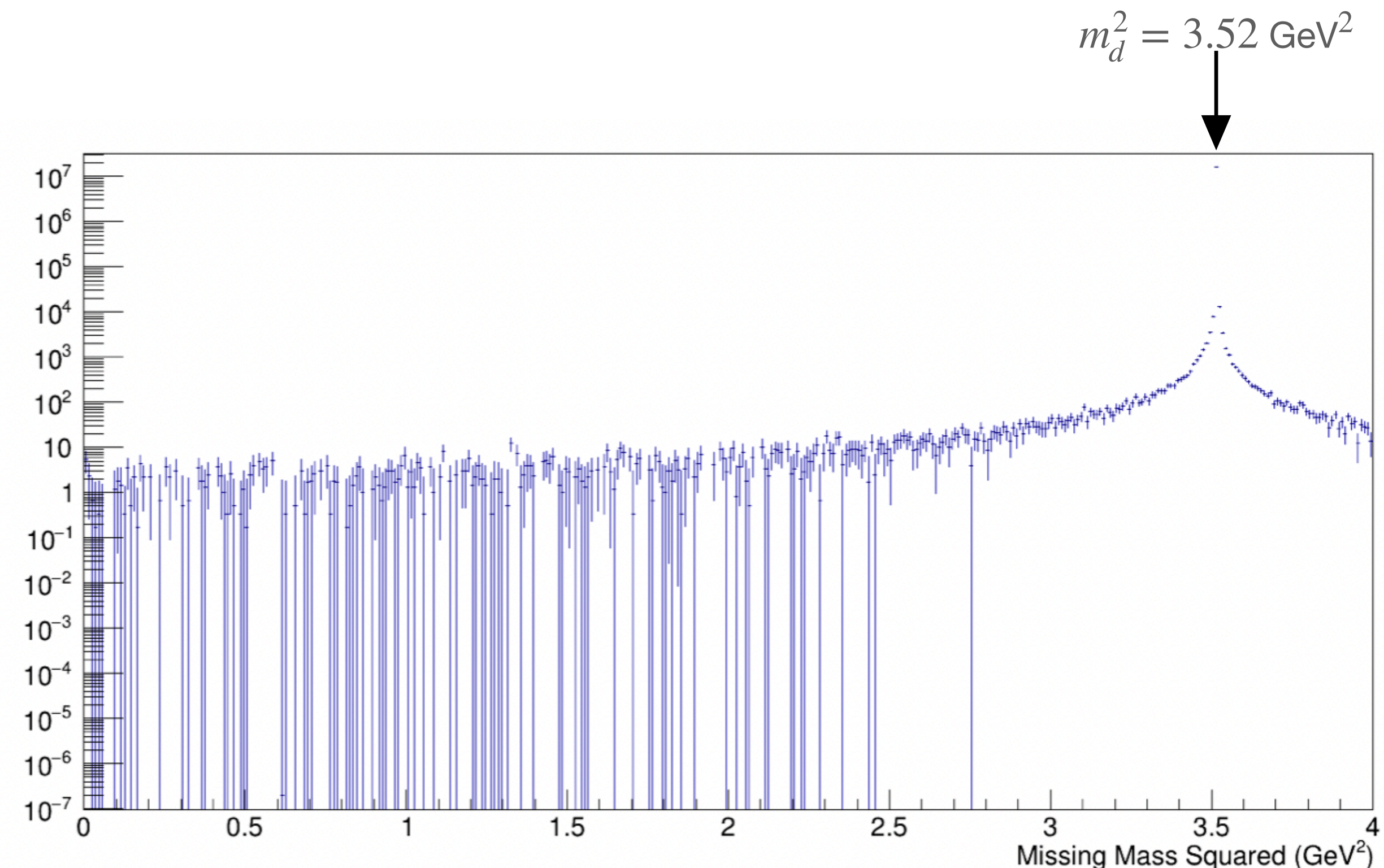
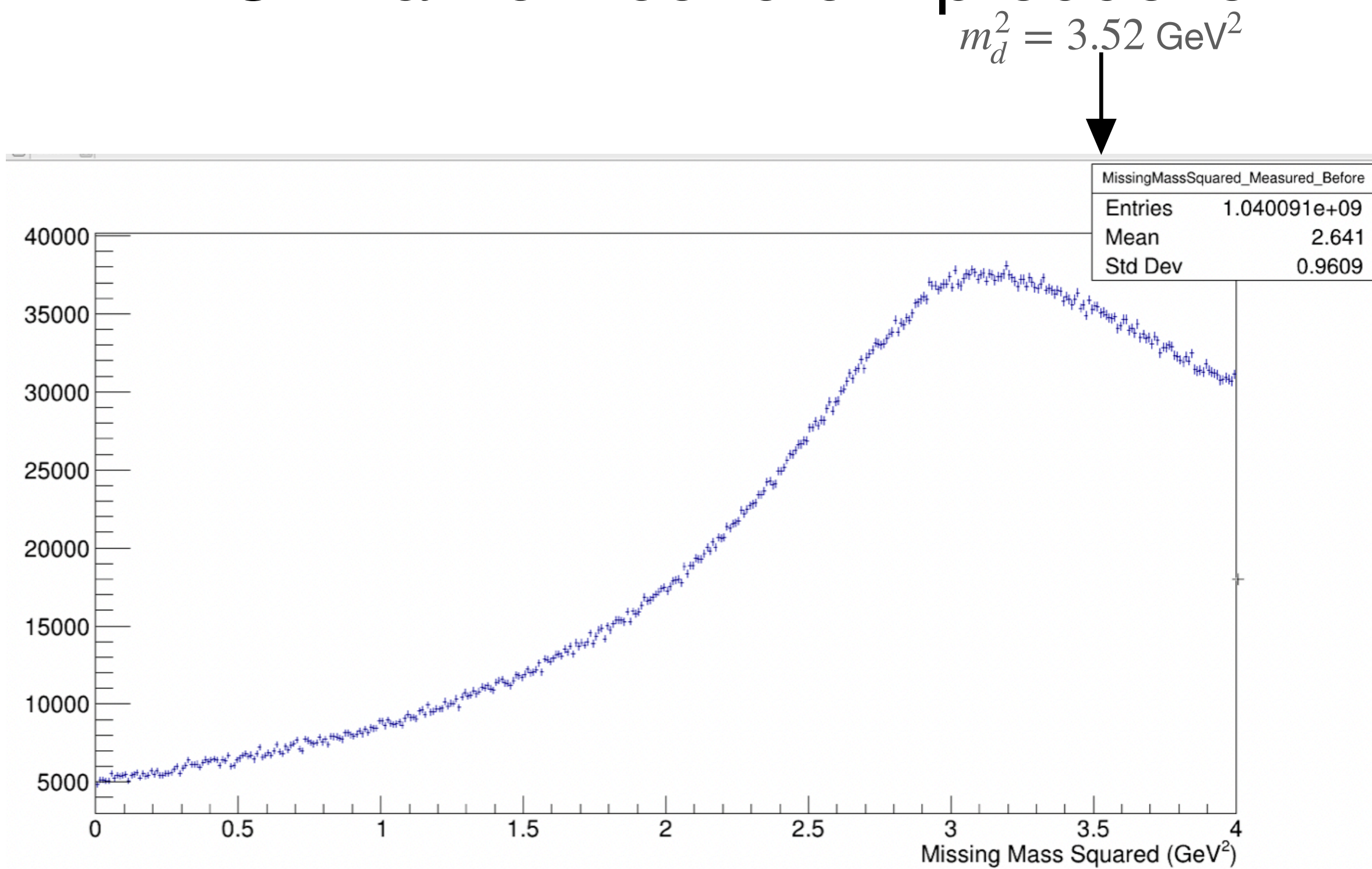
- Reaction filter setup: $\gamma d \rightarrow \phi(d) \rightarrow K^+ K^-(d)$ (1_45__11_12_m45)
- Combo construction
 - kinematic fitting with P4 and vertex constraint
 - 4 beam bunches on each side
 - allows for 3 extra tracks and 999 extra showers
- Cuts:
 - timing cut for PID (BCAL, FCAL, TOF, ST)
 - dE/dx cut for PID (CDC)

Coherent phi production

- DSelector cuts
- Confidence level cut: $CL > 0.1$
- Missing mass squared cut: $2.5 \text{ GeV}^2 < MM^2 < 4.5 \text{ GeV}^2$
- Production vertex (KinFit) cut: $51 \text{ cm} < z < 76 \text{ cm}$, $r = \sqrt{x^2 + y^2} < 1 \text{ cm}$
- Beam energy cut: $6 \text{ GeV} < E_\gamma < 11 \text{ GeV}$

Coherent phi production

- Missing mass squared before all cuts $(p_\gamma + p_d - p_{K^+} - p_{K^-})^2$, $p_d = (m_d, 0, 0, 0)$
- Measured values have a peak slightly shifted from 3.52 GeV^2
- Similar to incoherent production



Coherent phi production

- Invariant mass of K^+K^- pair
- CL and MM2 cuts are very effective to remove obvious background, except the misidentification of rho meson

