

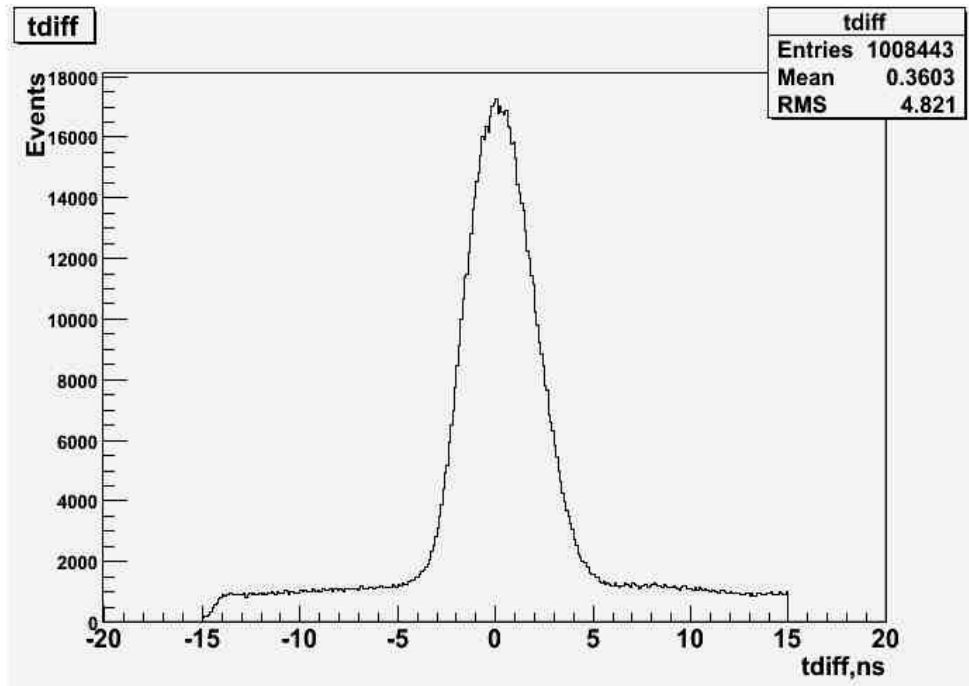
The Procedure of Pi^0 Yield Analysis

Lingling Ma

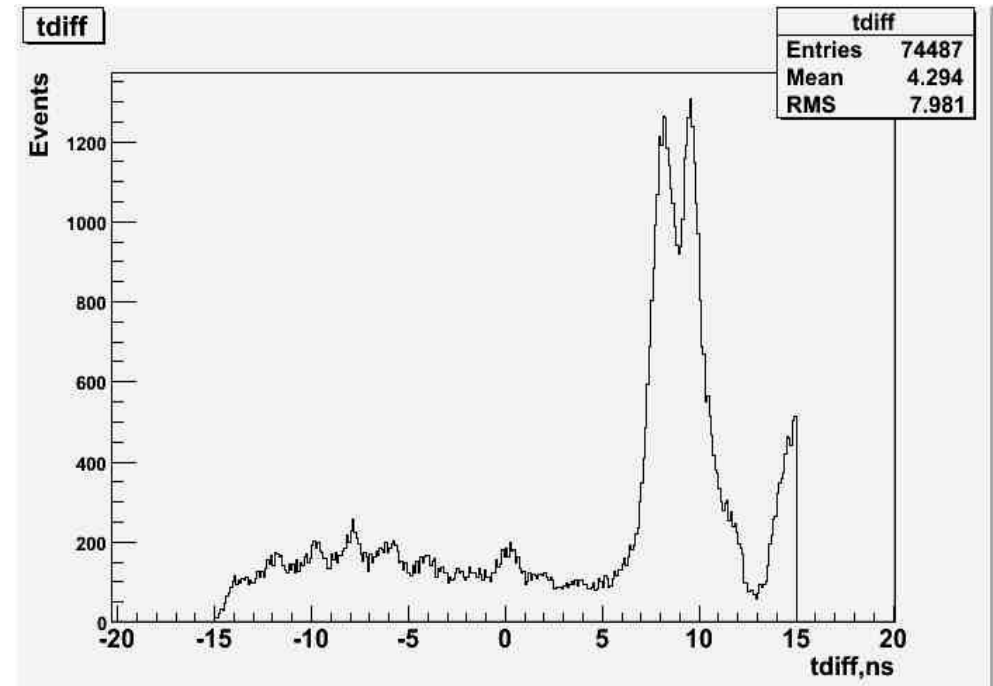
Sep 6, 2013

1. Study the trigger select conditions for π^0 yeild

Tagger – HYCAL coincident time by **hycal trigger**

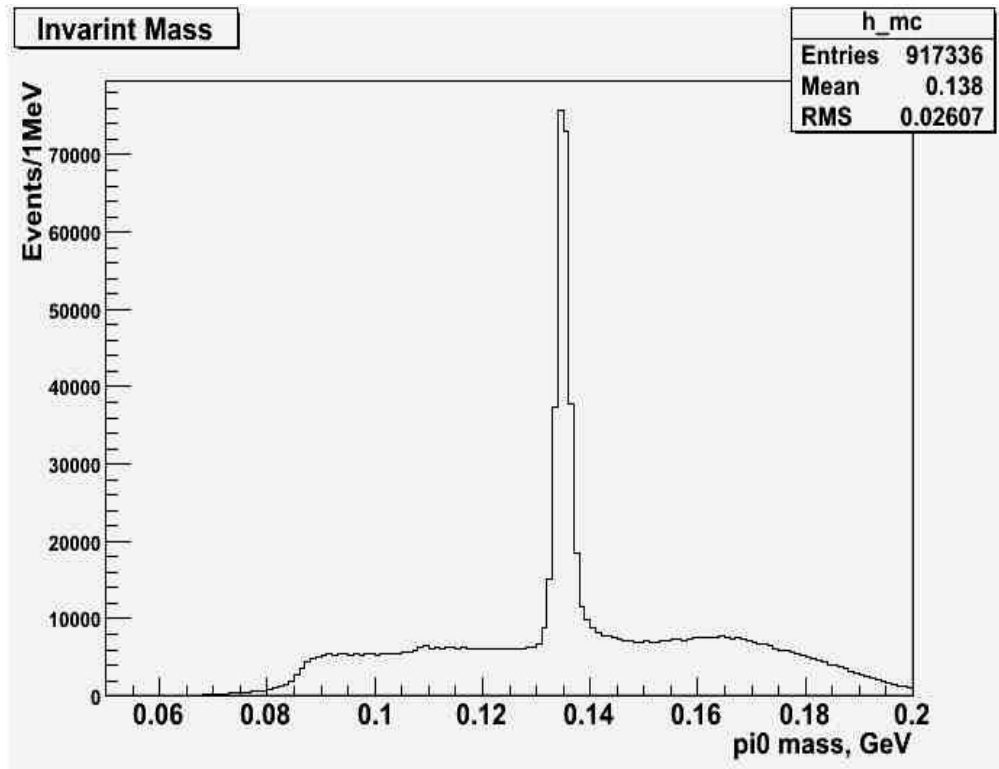


Tagger – HYCAL coincident time by only **coincidence trigger** (no hycal trigger)

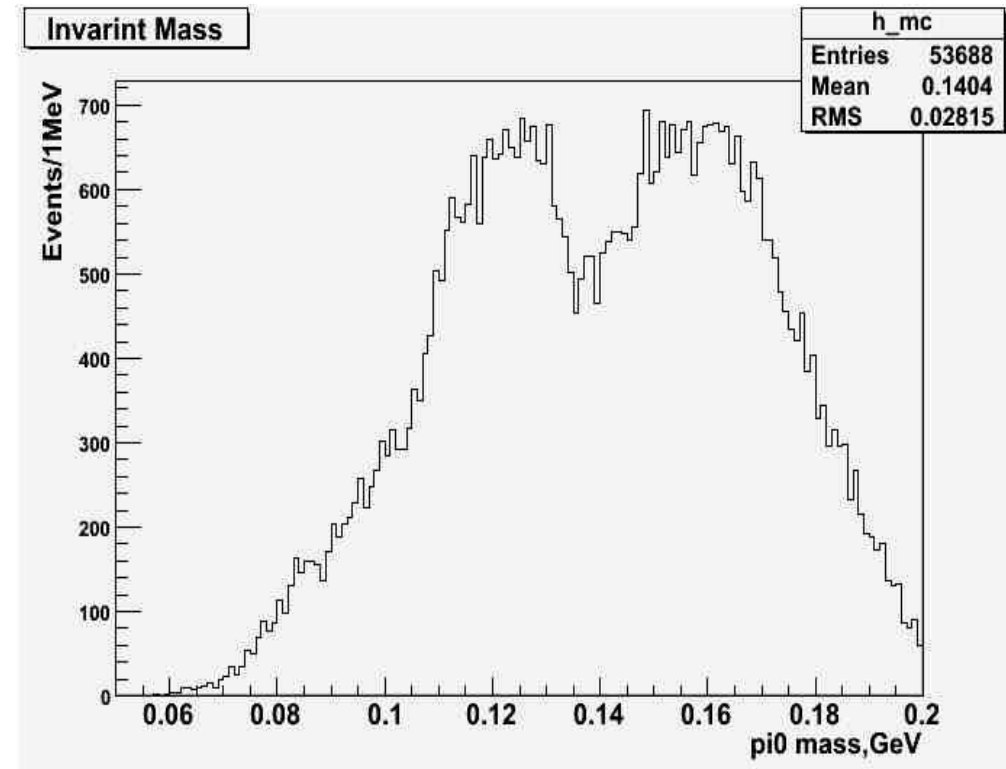


Event select conditions: 1) Exclude beam-trips; 2) $|tdiff| < 15$ ns; 3) Best tdiff; 4) Cluster type: crystal; 5) $0.5 \text{ GeV} < E_y < 6 \text{ GeV}$; 6) $3.5 \text{ GeV} < E_{yy} < 8 \text{ GeV}$; 7) Invariant mass $M_0 > 0.08 \text{ GeV}$;

Constraint $m_{\gamma\gamma}$ by using **hycal trigger**



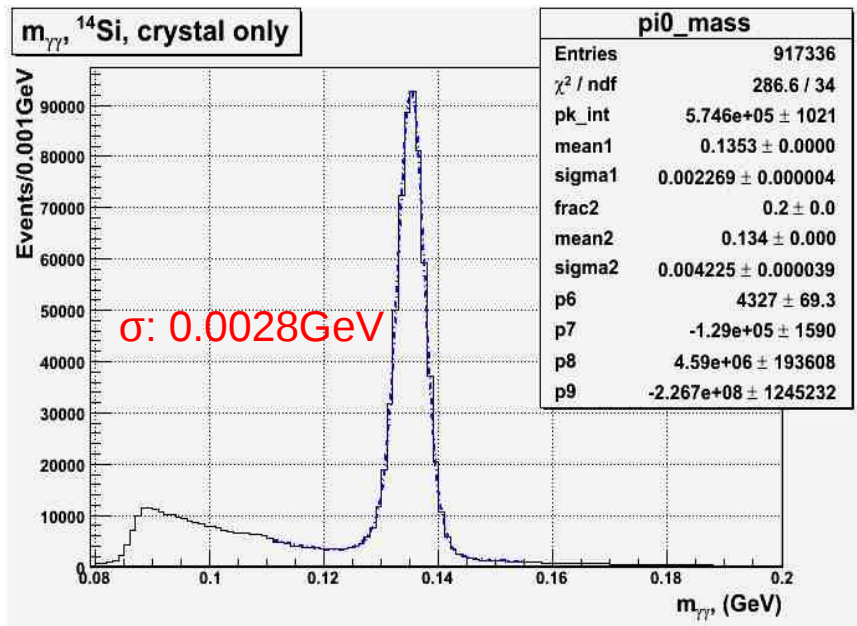
Constraint $m_{\gamma\gamma}$ by using **coincidence trigger** (no hycal trigger)



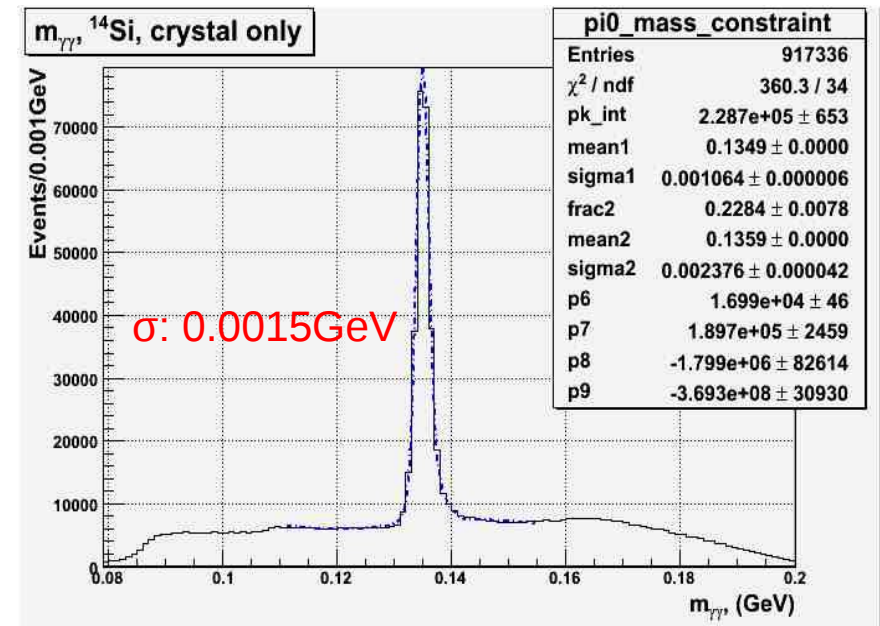
Event select conditions: 1) Exclude beam-trips; 2) $|tdiff| < 15\text{ns}$; 3) Best $tdiff$; 4) Cluster type: crystal; 5) $0.5\text{ GeV} < E_{\gamma} < 6\text{ GeV}$; 6) $3.5\text{ GeV} < E_{\gamma\gamma} < 8\text{ GeV}$; 7) Invariant mass $M_0 > 0.08\text{ GeV}$;

2. Define Tdiff cut for pi0 event selection

$M_{\gamma\gamma}$ with no constraint(θ [0,2.5] deg)

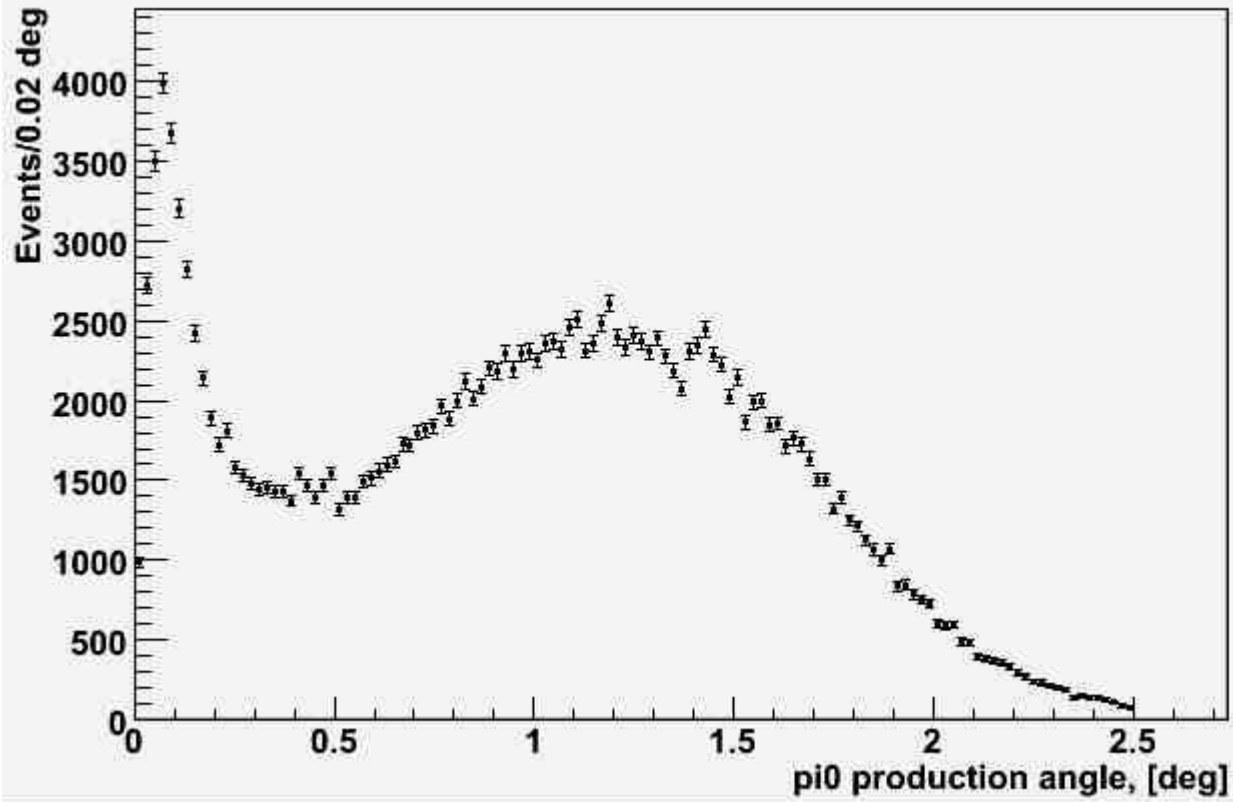


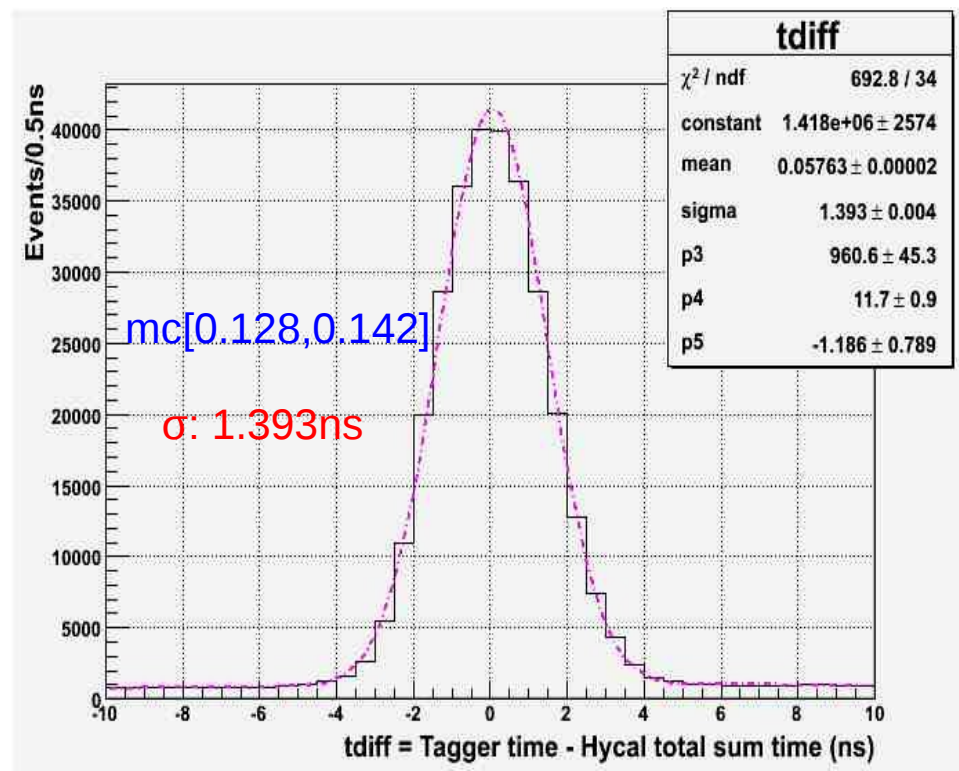
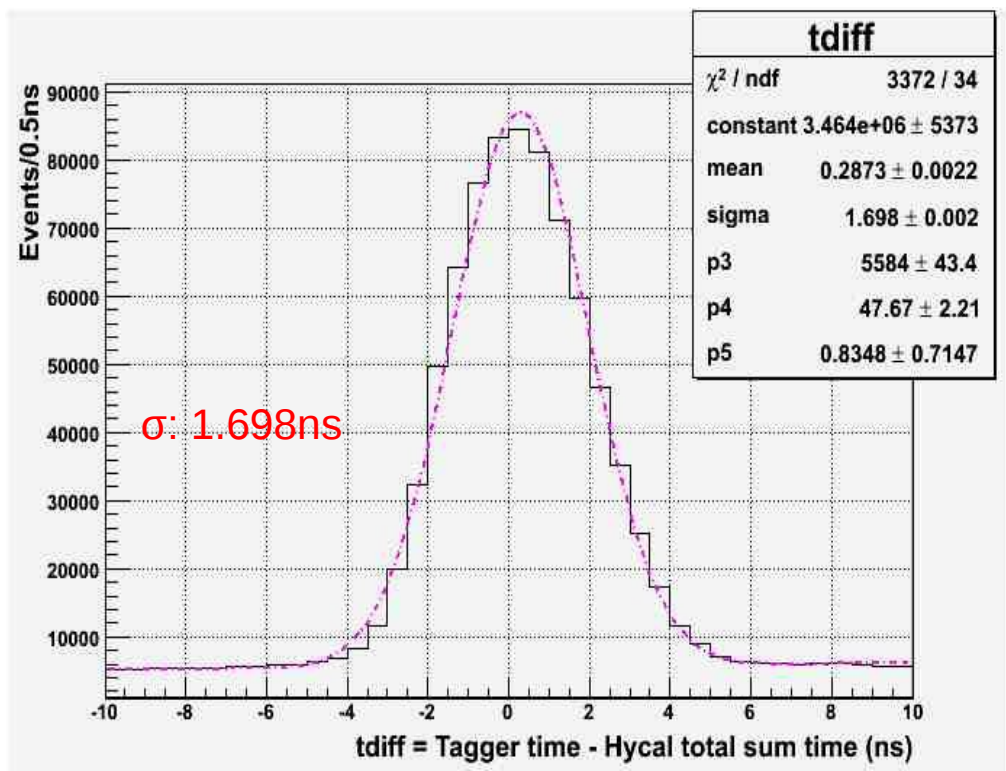
$M_{\gamma\gamma}$ with with constraint(θ [0,2.5] deg)



- Event select conditions:** 1) Exclude beam-trips; 2) Using Hycal trigger 3) $|t_{diff}| < 10\text{ns}$; 4) Best tdiff; 5) Cluster type: crystal ; 6) $0.5 \text{ GeV} < E_{\gamma} < 6 \text{ GeV}$; 7) $3.5 \text{ GeV} < E_{\gamma\gamma} < 8 \text{ GeV}$; 8) Invariant mass $M_0 > 0.08 \text{ GeV}$;

Graph





3. study veto cut

