update of ISR recovery for MEM

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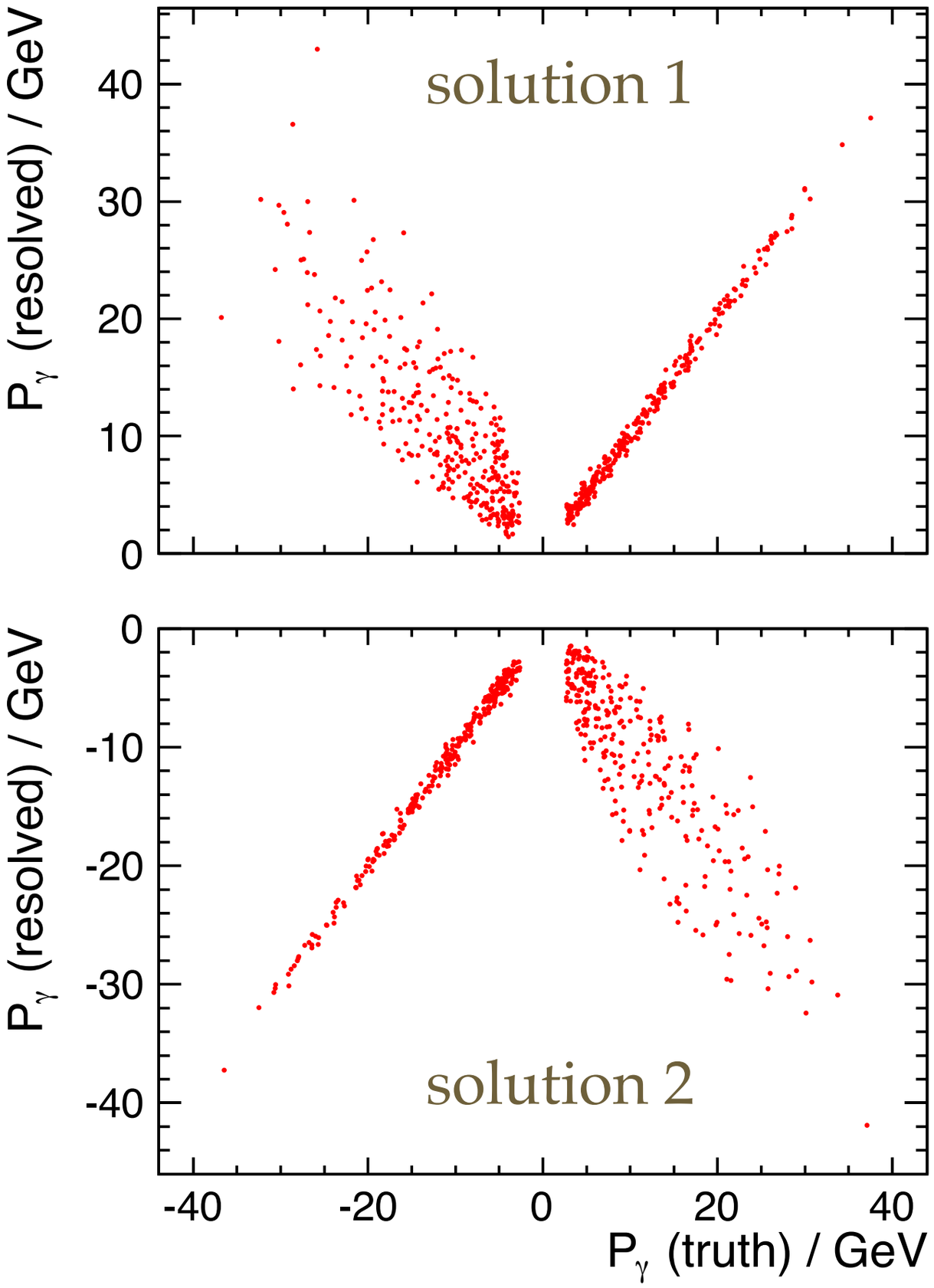
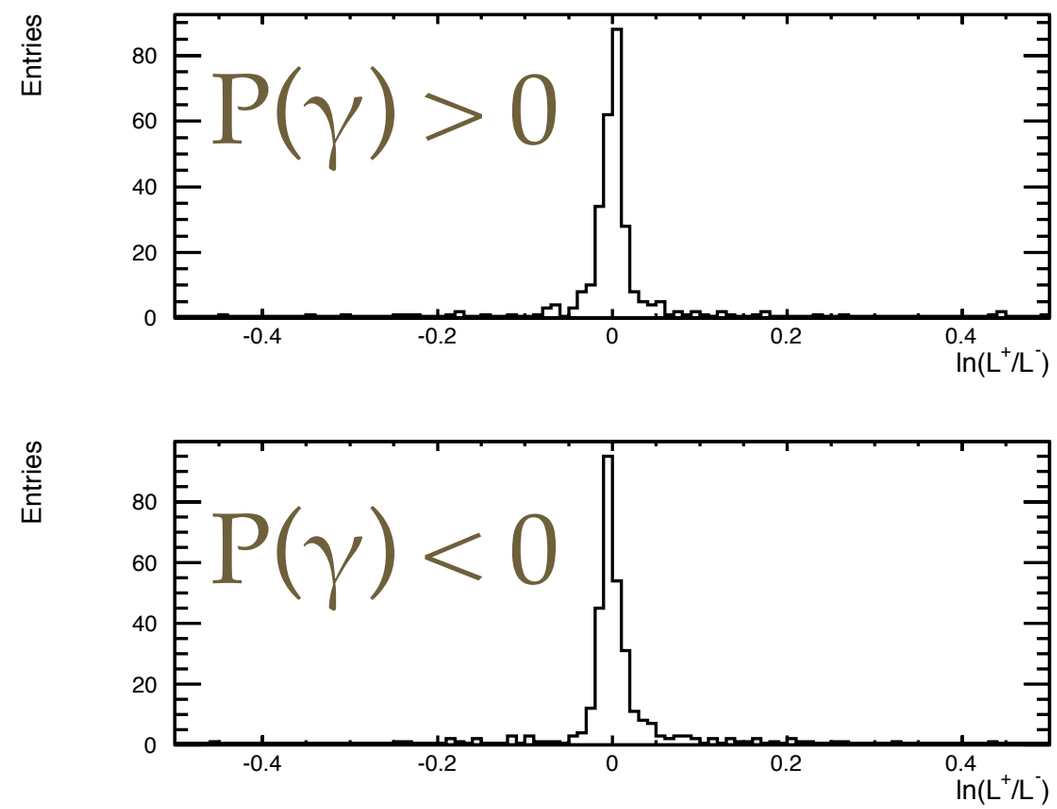
reminder: two solutions to resolve ISR

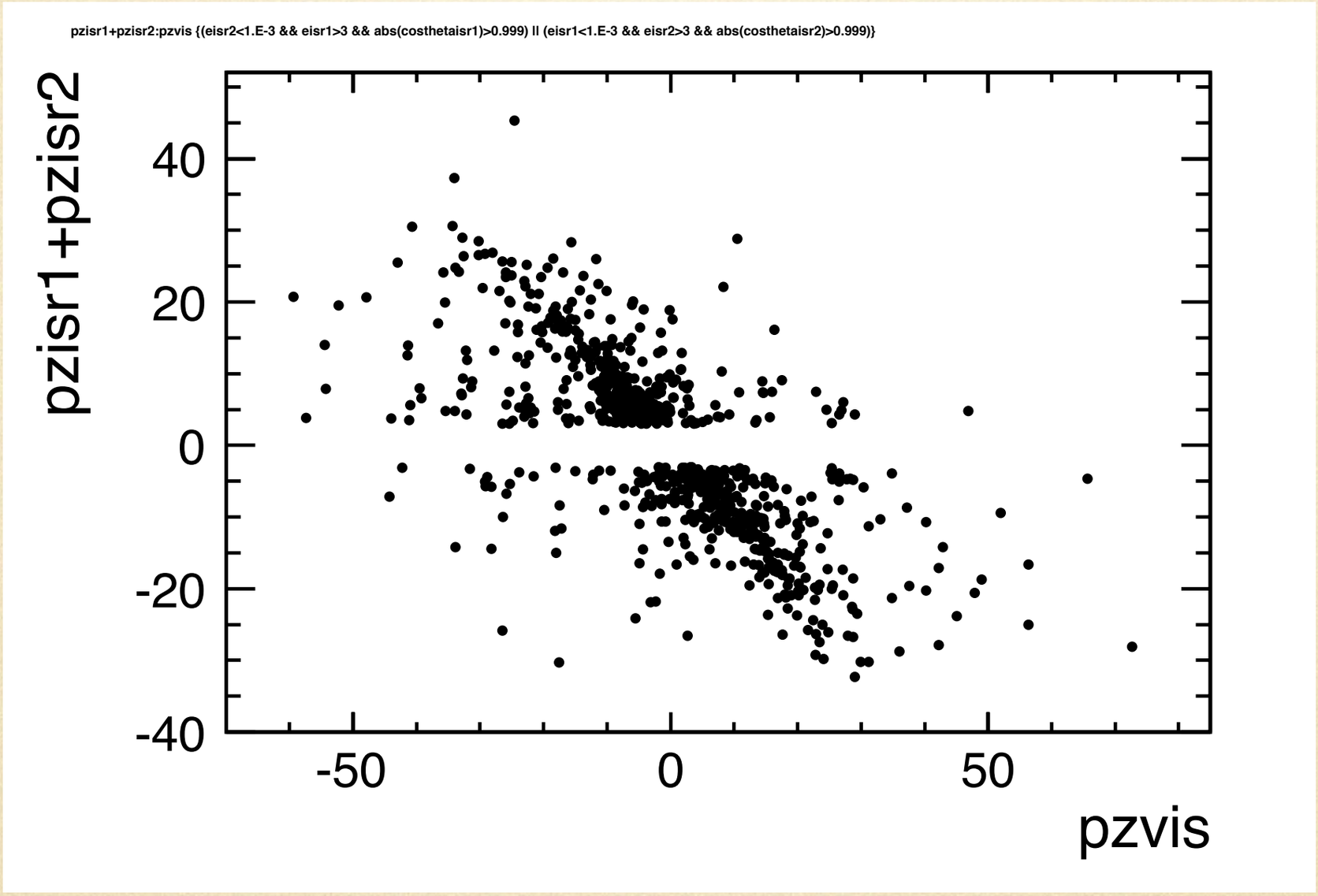


ME



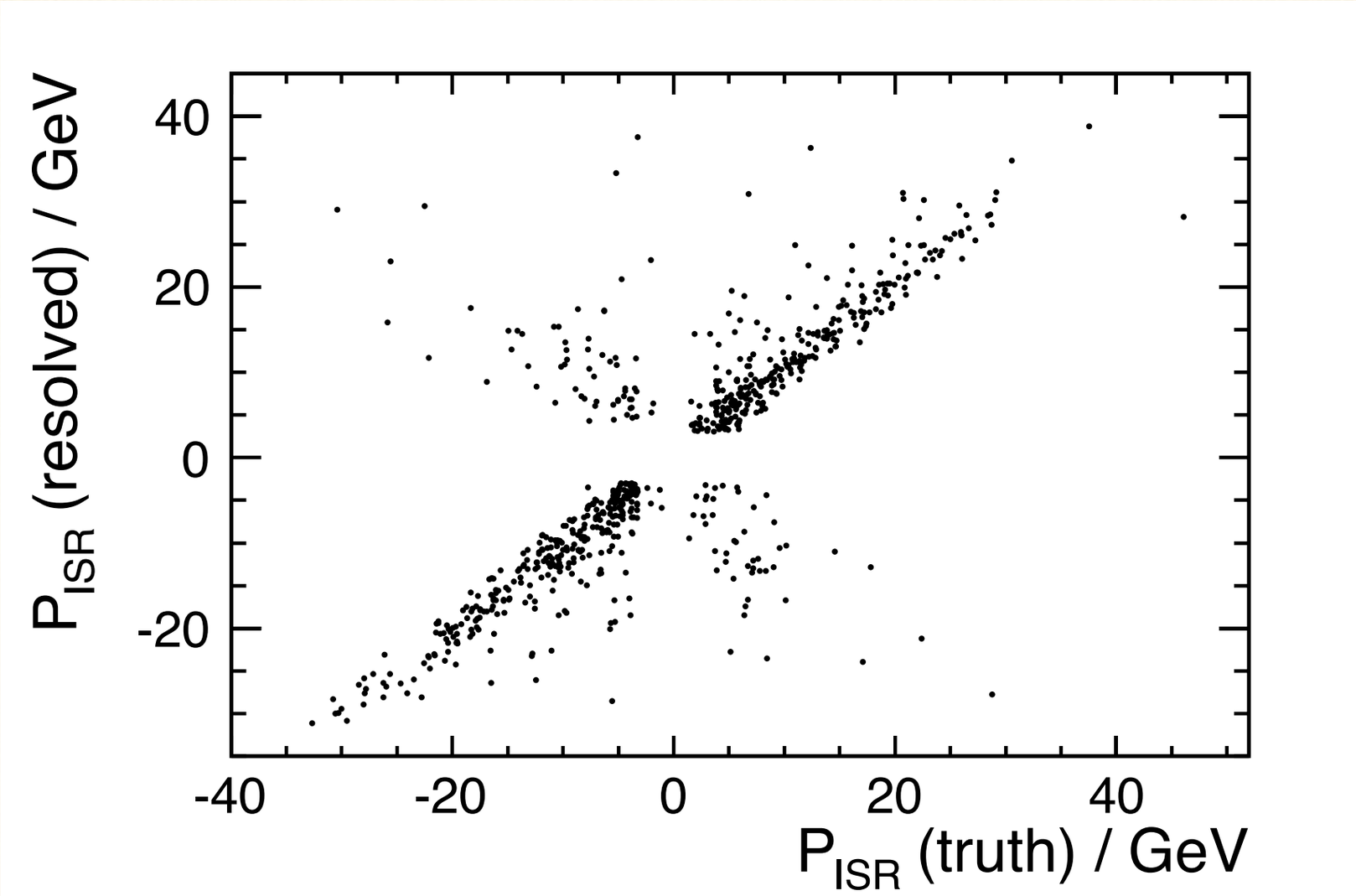
both solutions seem allowed

correlation between visible and ISR momentum (Pz)



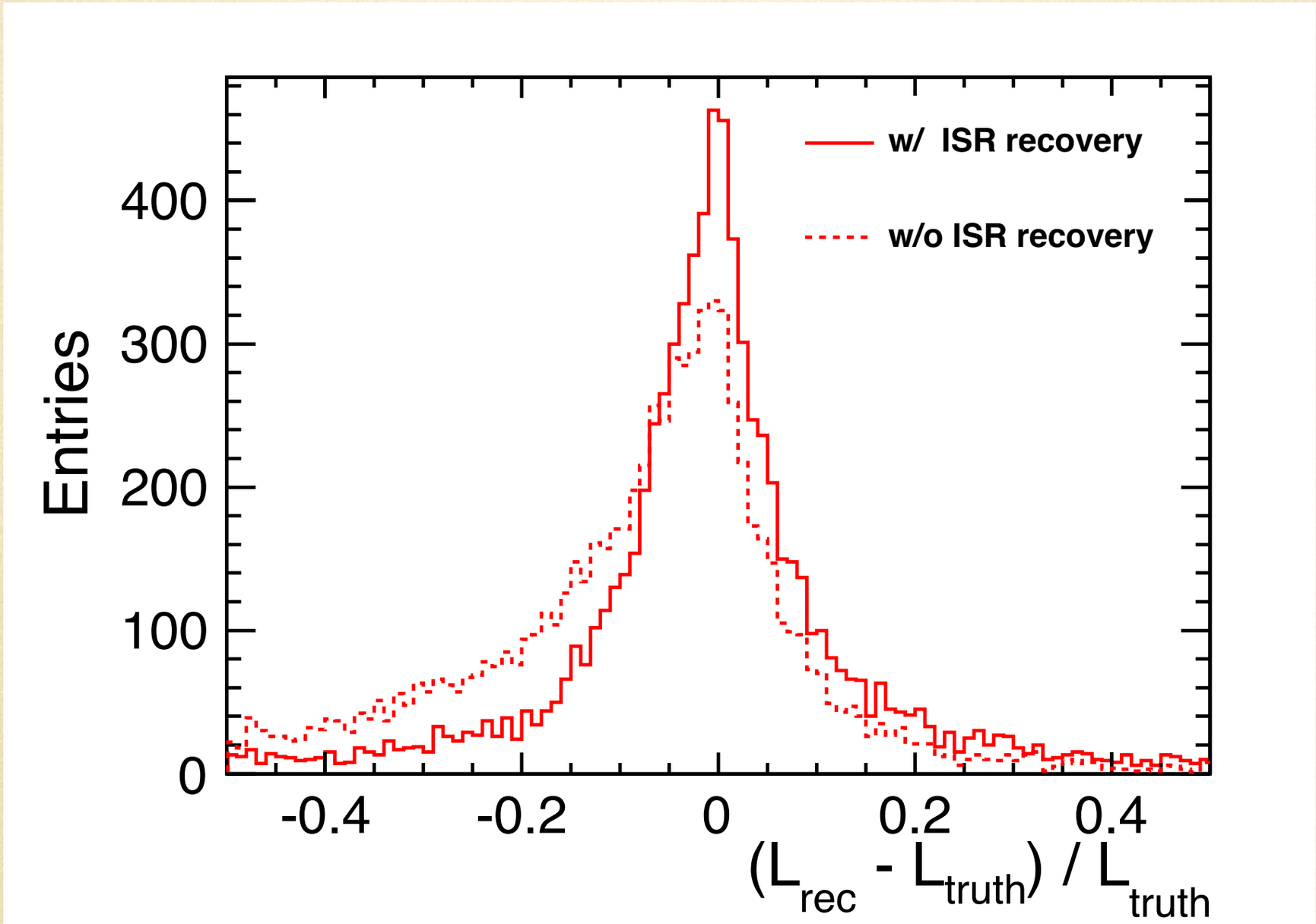
z-momentum of ISR and visible part turn to have opposite sign —> to help select the solution

the selected solution: resolved versus truth



recovery of ISR looks working well

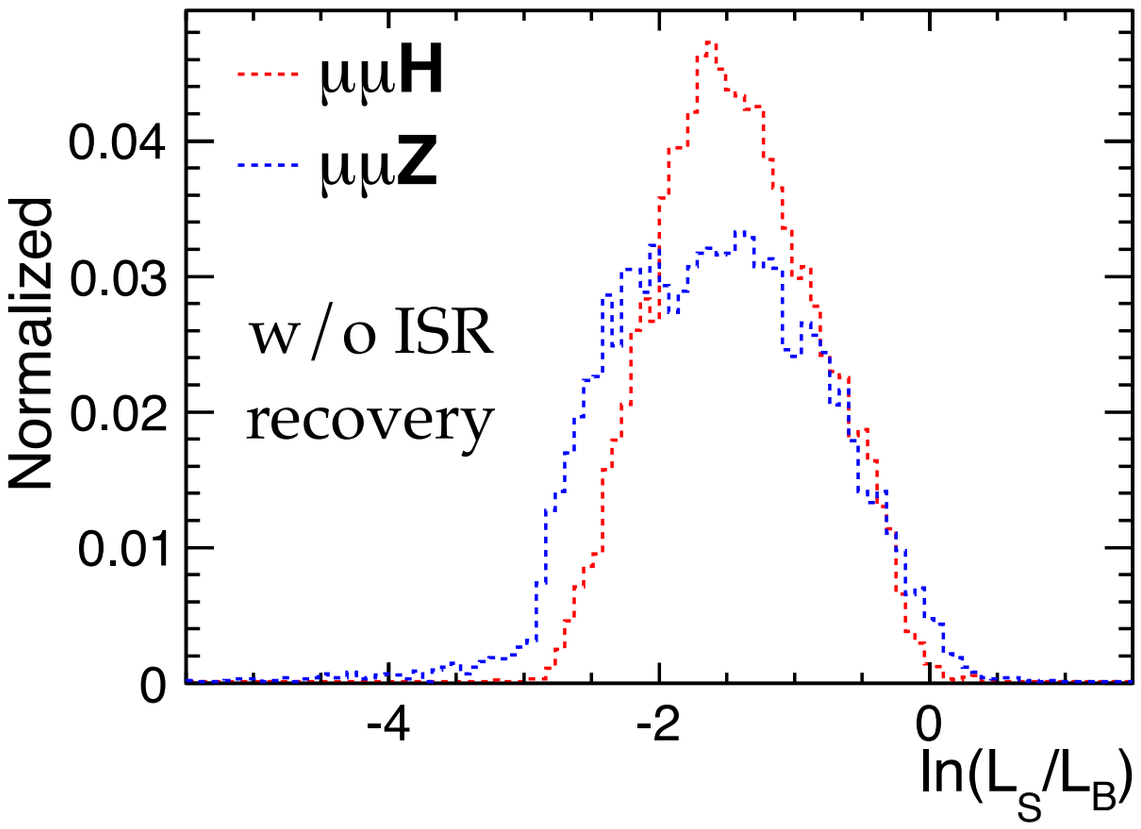
matrix element after ISR recovery (signal μμH)

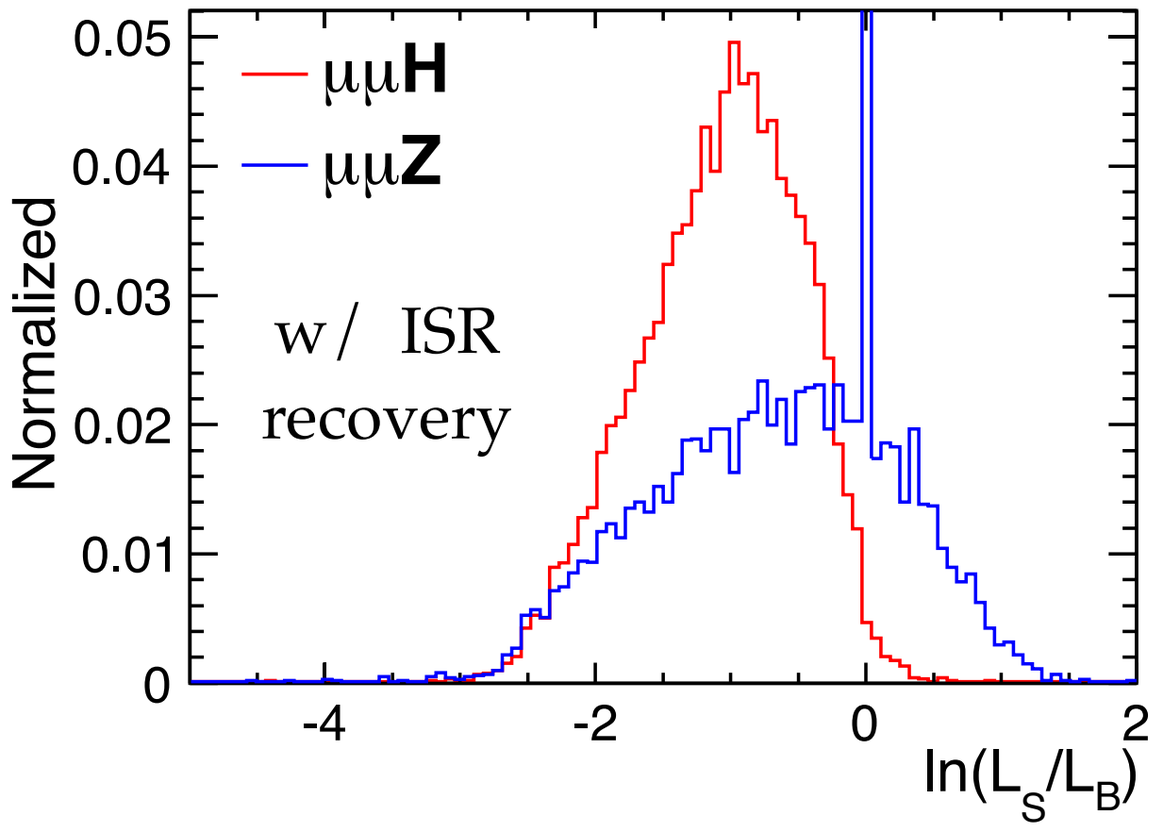


makes significant difference!

matrix element after ISR recovery (μμH versus μμZ)

(Breit-Wigner propagator of H not included)

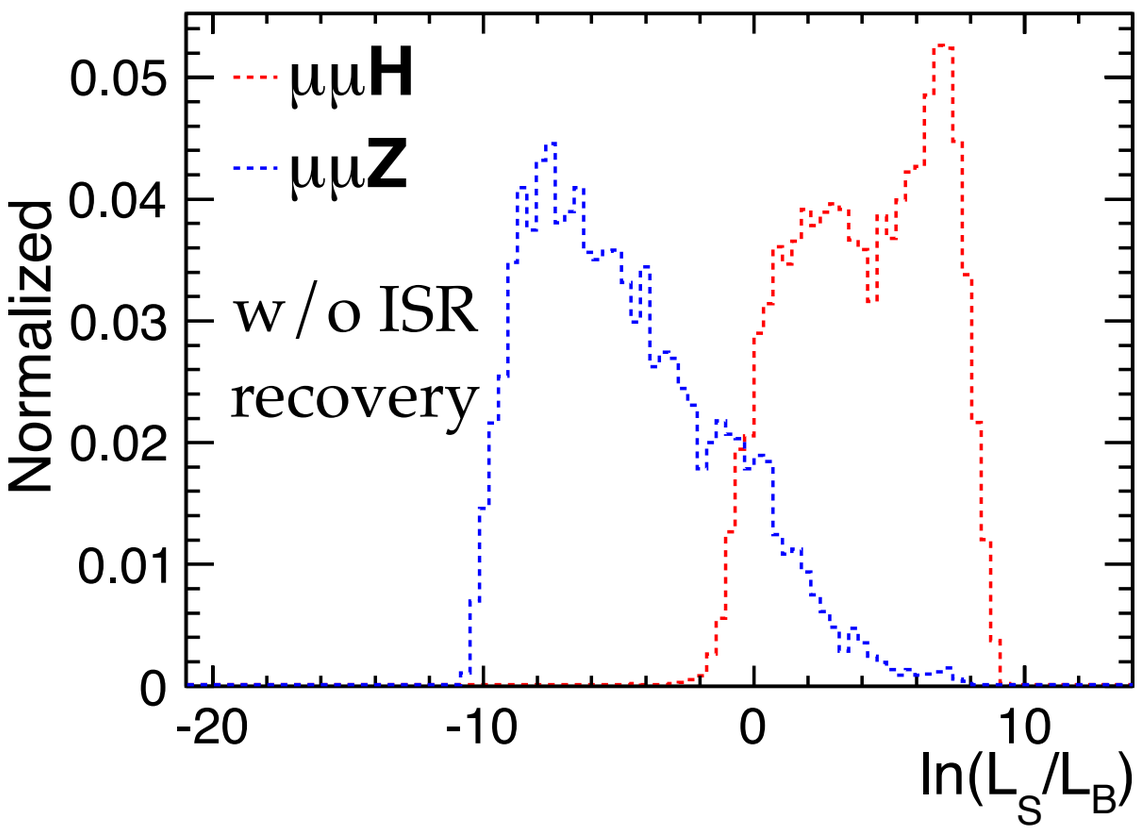


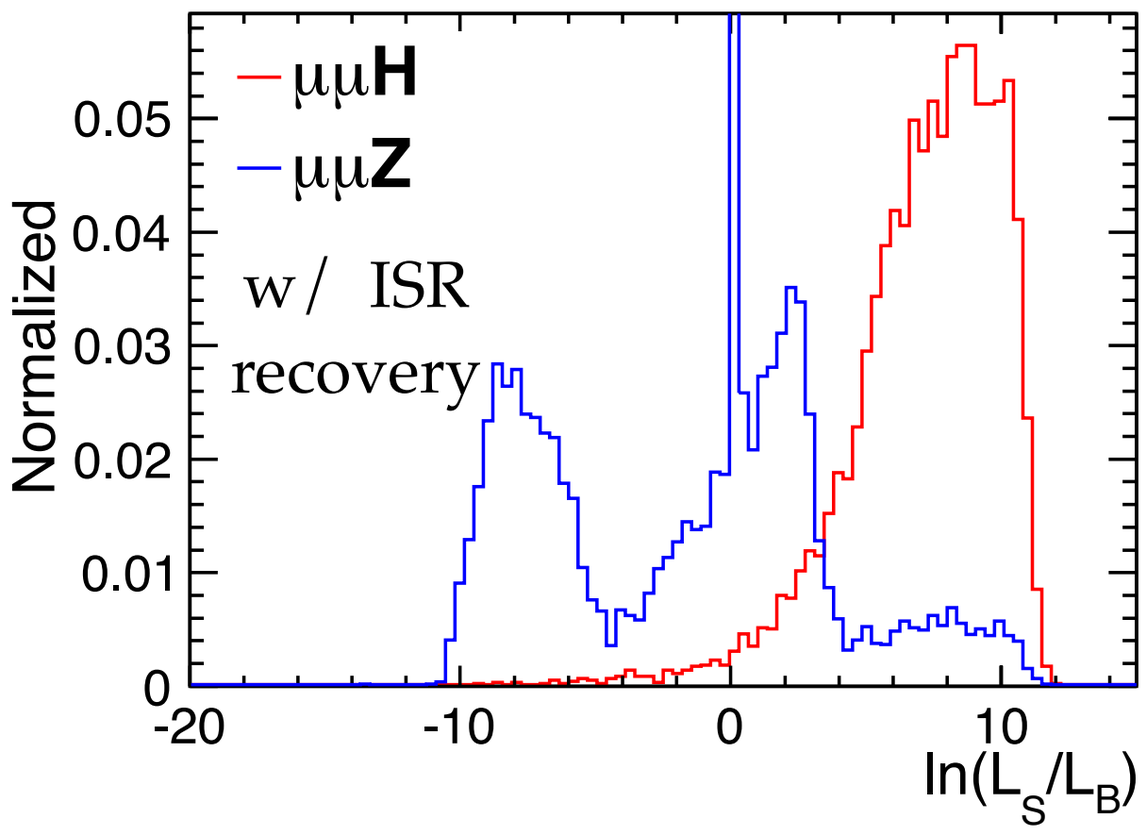


clear better separation

matrix element after ISR recovery (μμH versus μμZ)

(include Breit-Wigner propagator of H and Z)





clear better separation

back up

proposal to resolve ISR

- ☑ ISR enters detector: identification (see Tomita-san's study, eff ~ 90%)
- ☐ what if ISR goes to beam pipe? (dominant)

we can resolve it!

$$|P_z(\gamma)| = |P(\gamma)|$$

$$P_y(H) = -P_y(Z); \quad P_x(H) = \sqrt{s}\sin\frac{\theta}{2} - P_x$$

$$P_z(H) = -(P_z(Z) + P_z(\gamma)$$

$$E(Z) + \sqrt{P_t^2(H) + P_z^2(H) + m^2(H)} + |P(\gamma)| = \sqrt{s}$$

$$P(\gamma) = \frac{s\cos^2\frac{\theta}{2} - 2\sqrt{s}(E(Z) - P_x(Z)\sin\frac{\theta}{2}) + m^2(H) - m^2(Z)}{2[P_z(Z) \pm (\sqrt{s} - E(Z))]}$$