

ISR photons comparison*: whizard 2.7 and KKMC

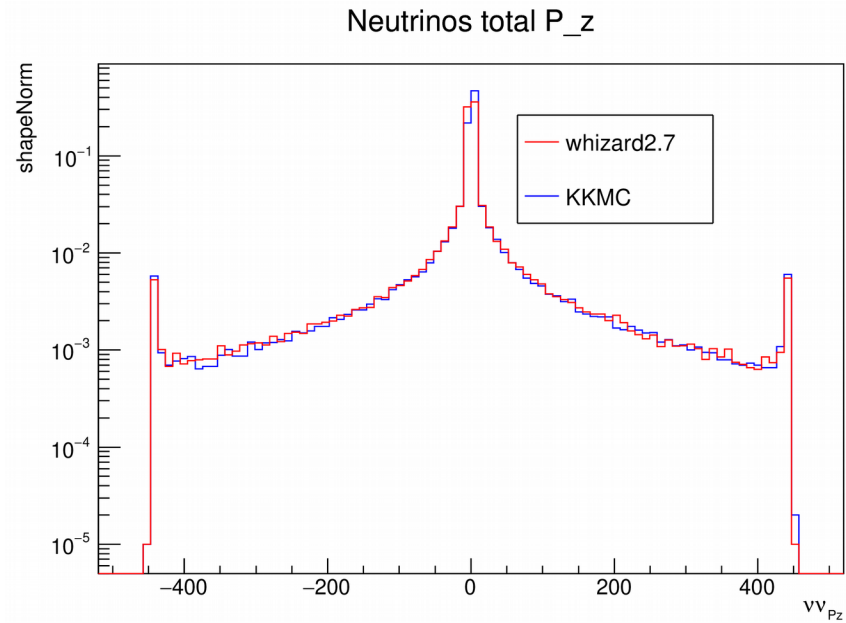
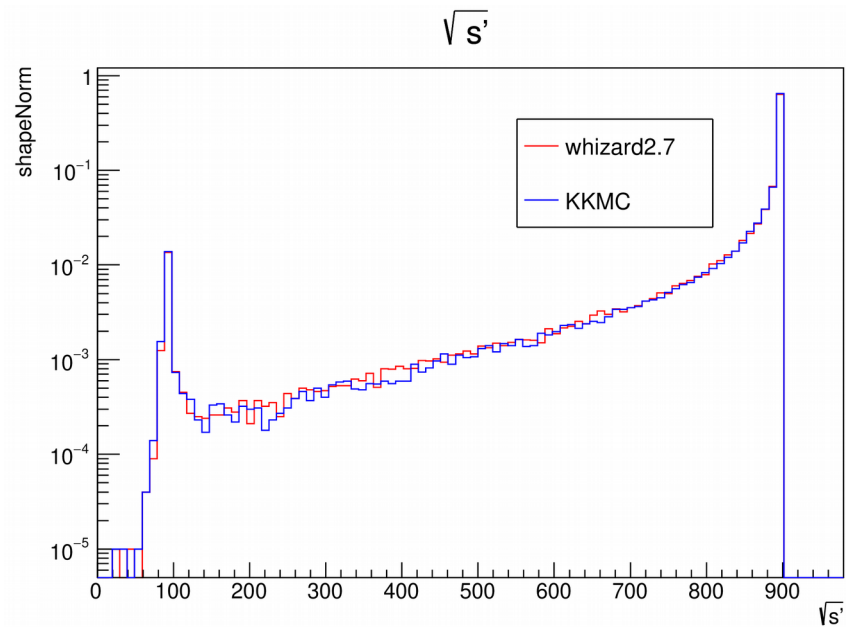
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WG Meeting 18.03.2019

**basic variables*

Some intro...

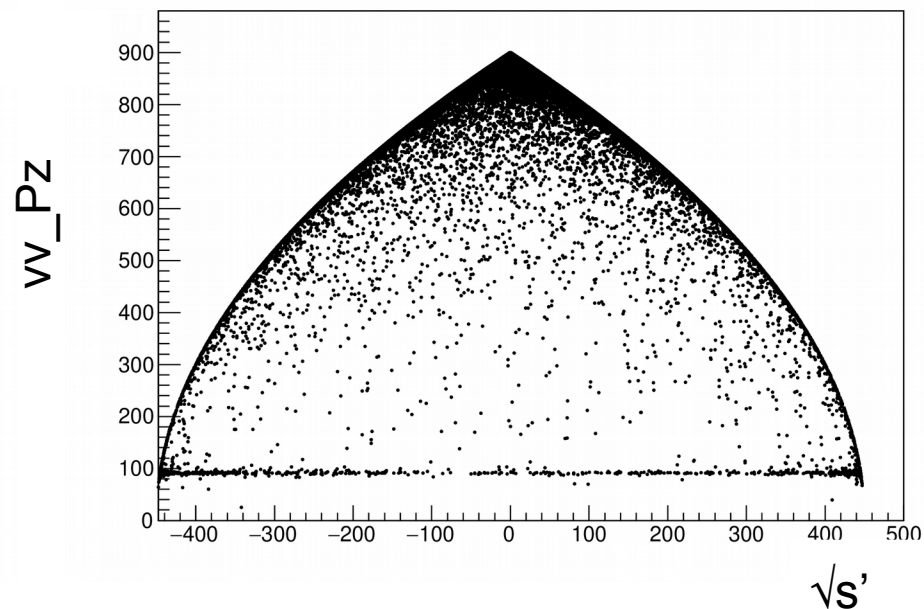
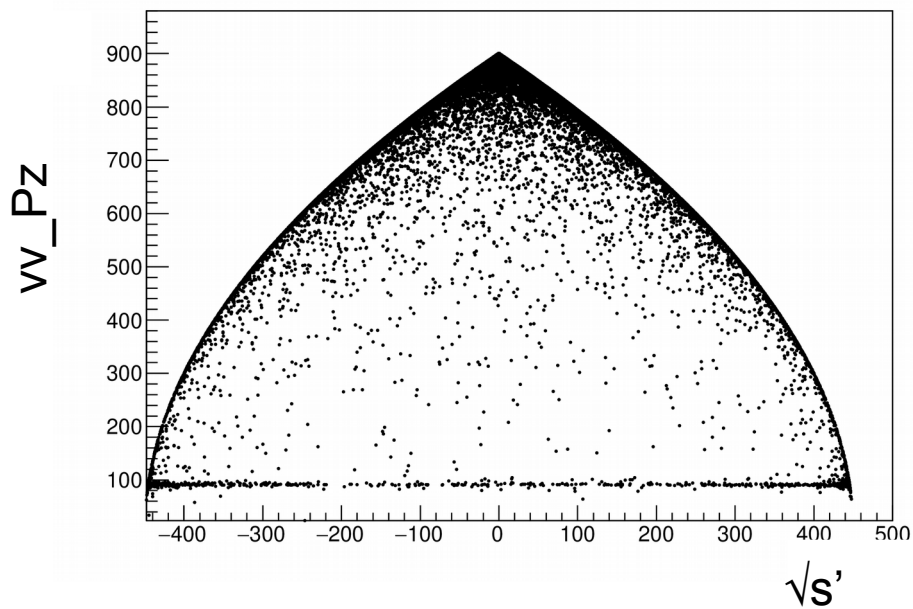
- What for?
 - Cross check of the ISR spectra
 - Crucial for i.e. mono-photon events
- Tools
 - Whizard2.7: basic CLIC 'magic-maker'
 - KKMC: LEP-devised MC
 - for now no more than 1TeV in CM
 - Process: $e^-e^+ \rightarrow \nu\nu$
 - ISR multpl:
 - Whiz=2
 - Kkmc 1 to 8

Kinematics



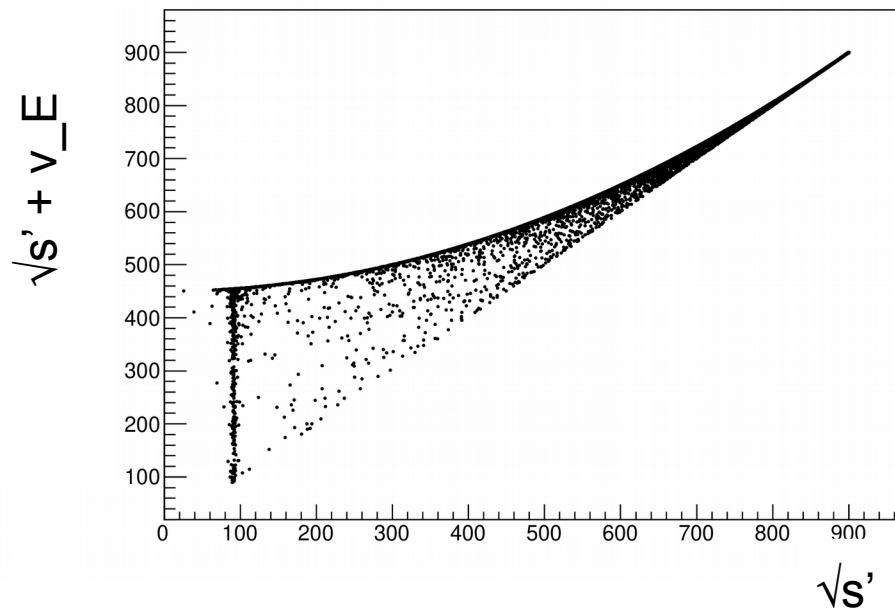
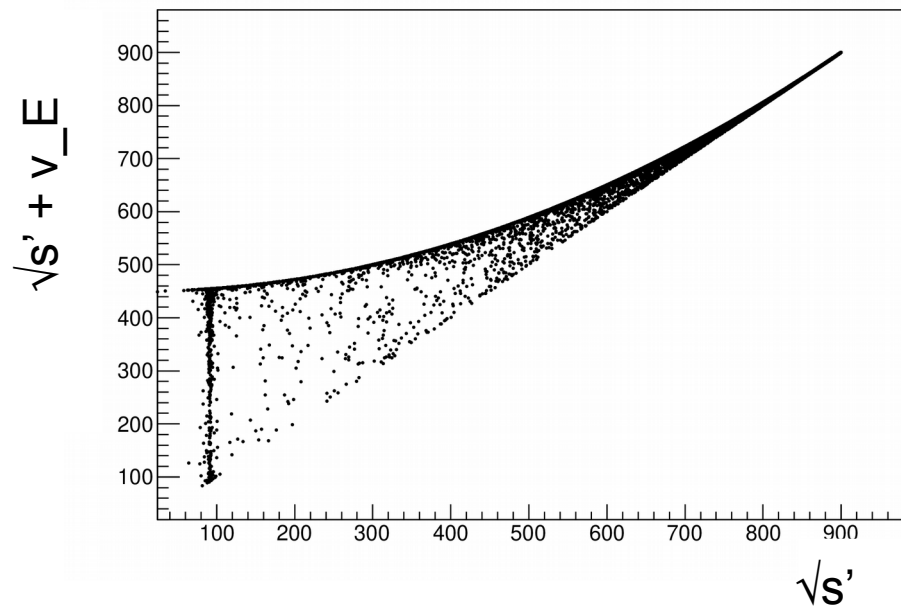
Kinematics

Longitudinal momenta of the neutrinos pair vs CM energy



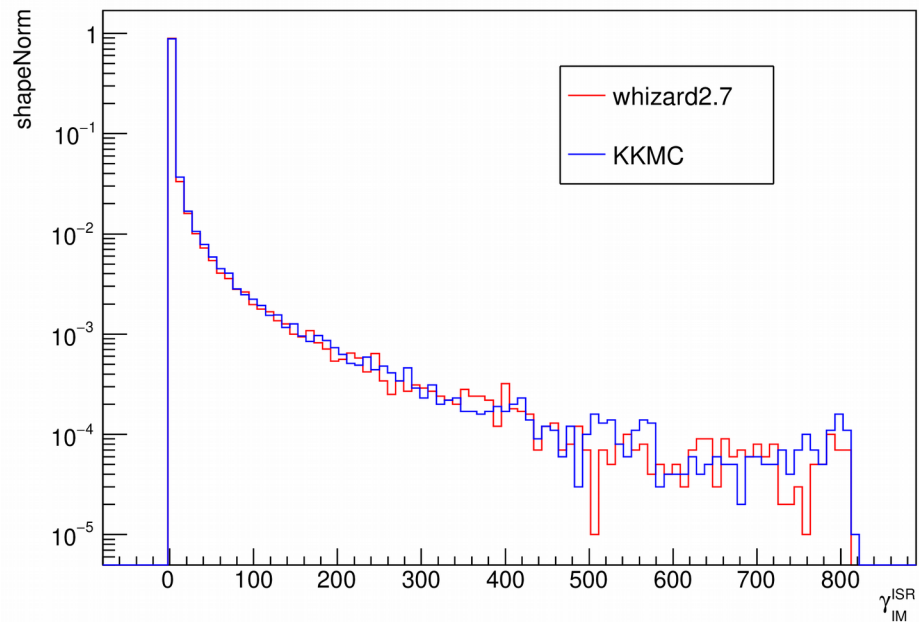
Kinematics

Available CM energy vs Total energy of the neutrino pair



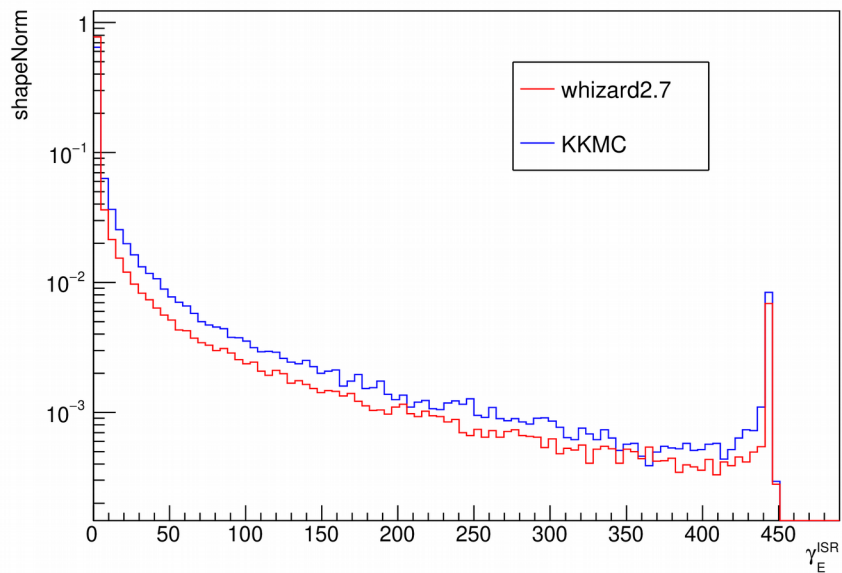
Kinematics

All ISR-photons InvMass

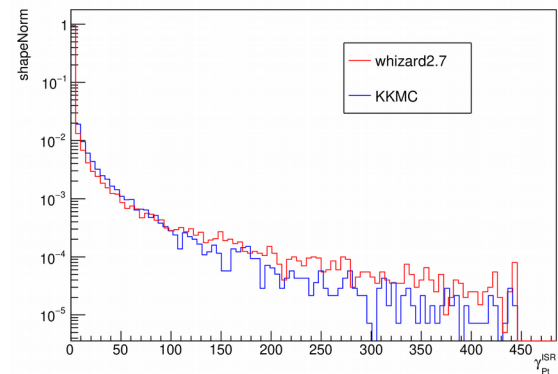


ISR photons variables

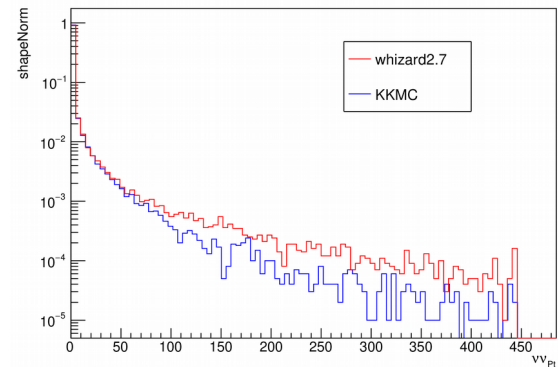
Energy of ISR photons



Pt of ISR photons

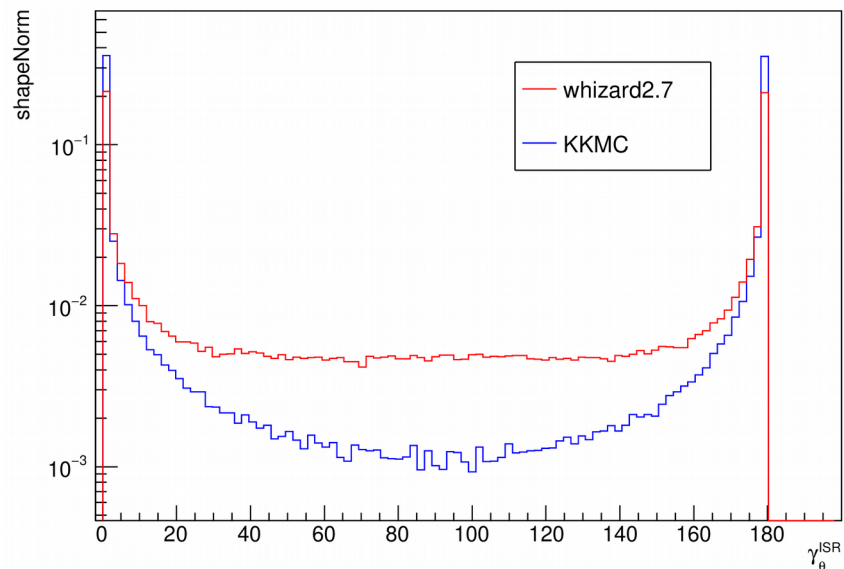


Neutrinos total P_t

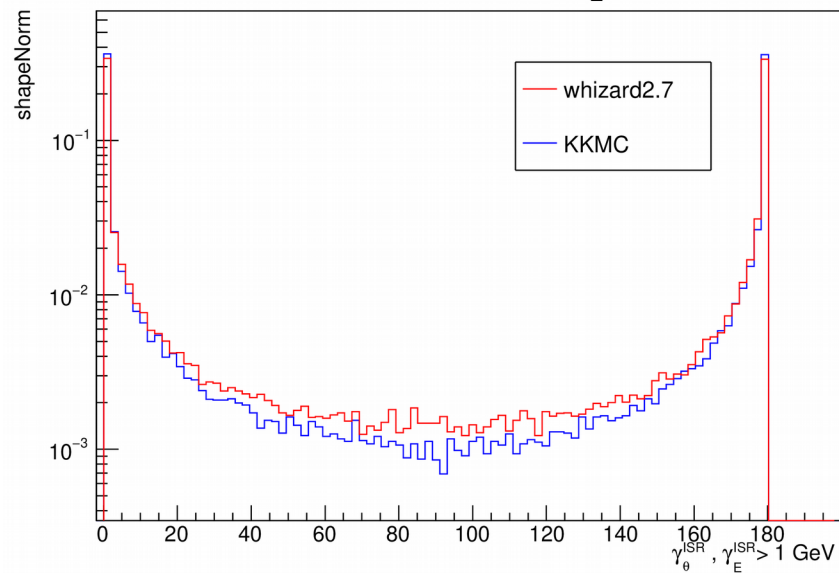


ISR photons variables

Theta of ISR photons



Theta of ISR photons with $\gamma_E^{\text{ISR}} > 1 \text{ GeV}$



Conclusions & Outlook

- Discrepancies in Pt distributions of the neutrino pairs
- Angular distributions of ISR photons differ a bit
 - with rough-detector-visibility cut of 10 degrees, more photons seen in whiz2.7 than in KKMC – 80% to 20%
 - Source: (mainly?) soft photons
- Energy of ISR photons in KKMC regularly higher than in Whizard. Opposite for Pt distributions
- To do: how to merge ISR photons with ME and avoid double counting.
 - Testing 'isr_q_max' whizard parameter