Experimental input from KLOE

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2nd RadioMonteCarLow 2 Meeting

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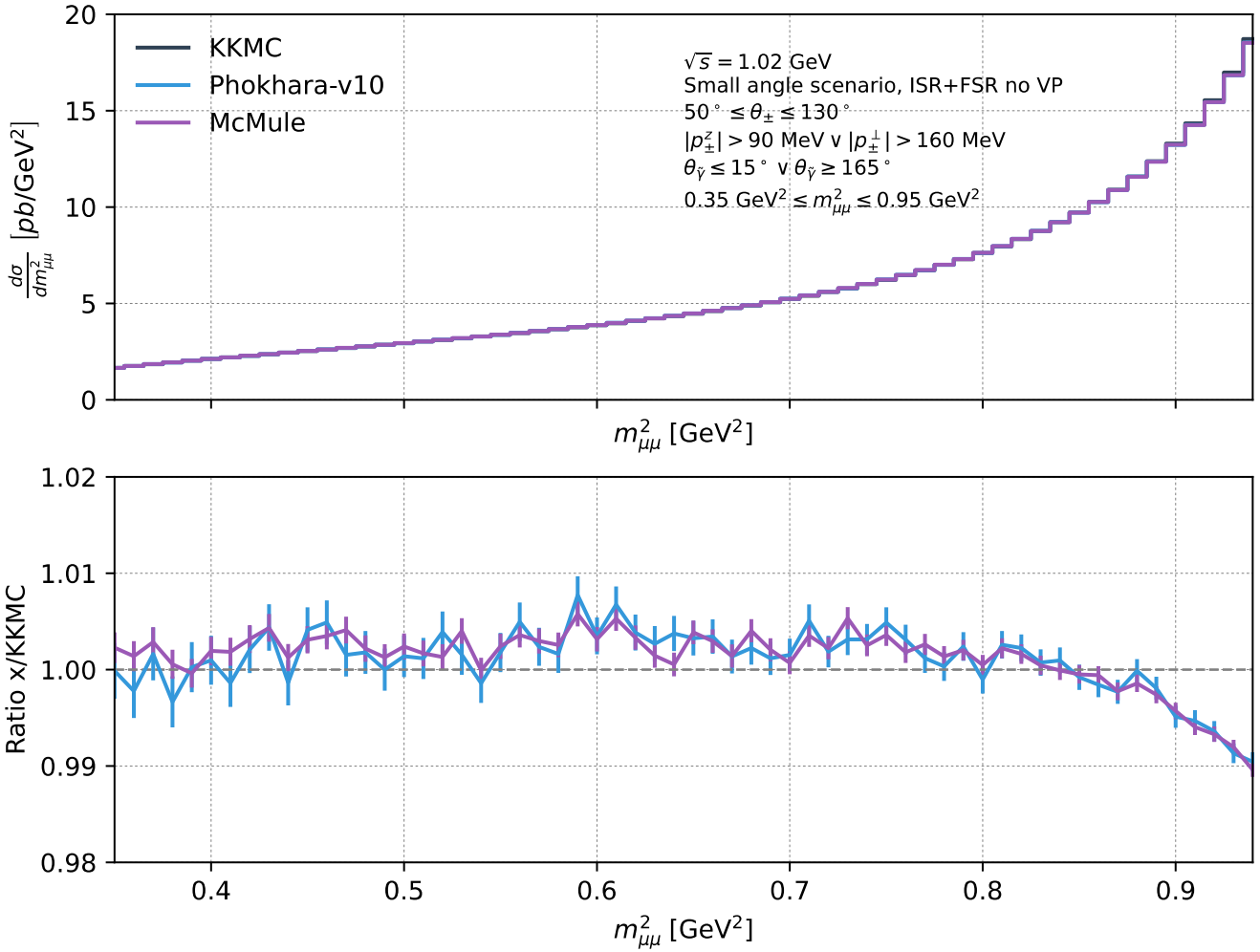
At the TI workshop in Japan we showed many comparisons:

- **μμγ:** ISR+FSR
  - comparison of Phokhara with KKMC and MCMULE ISR+FSR inclusive and withSA acceptance cuts
  - We compared Phokhara also with BaBayaga@NLO (LO+PS) but agreement unsatisfactory

All the comparisons done with VP off

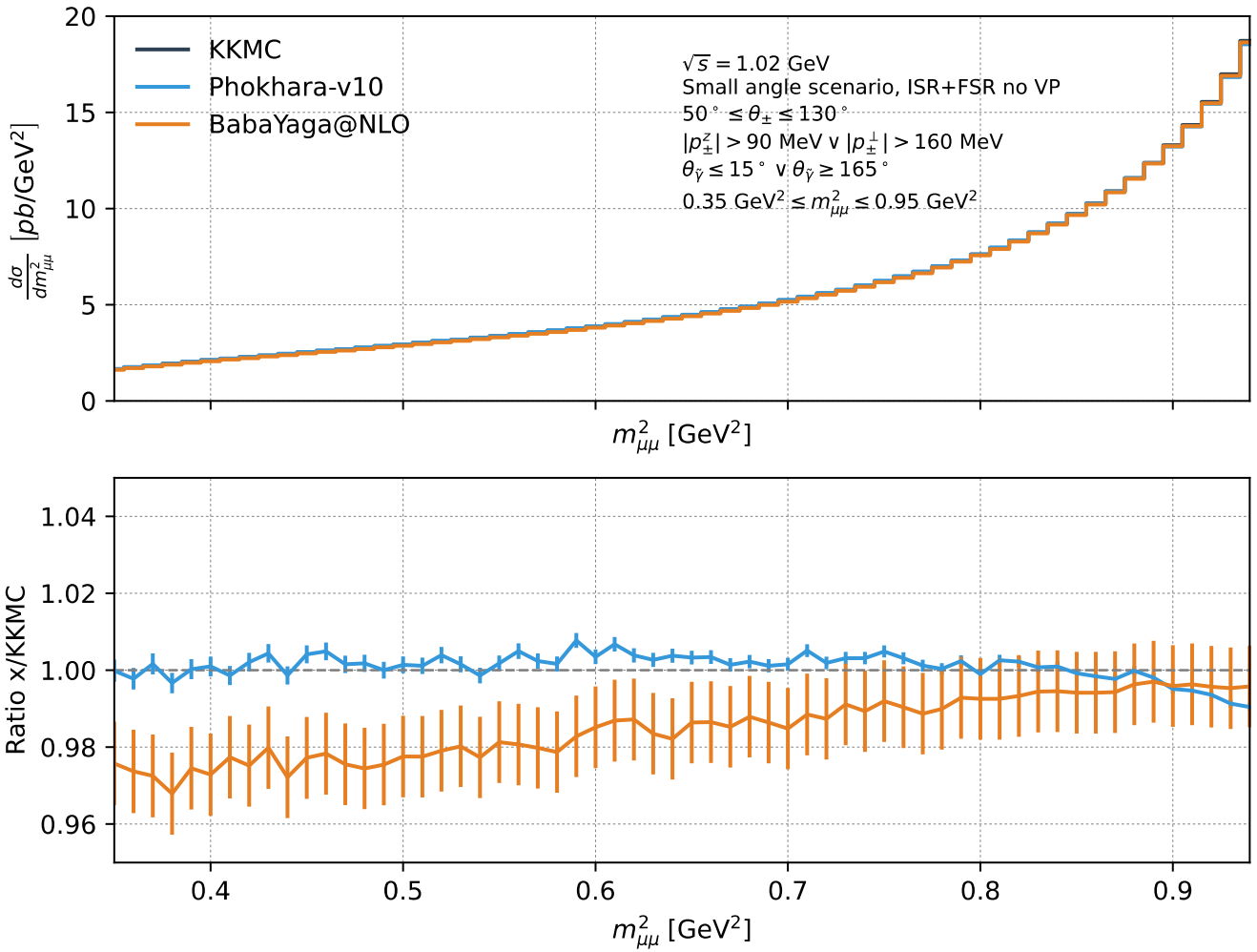
μμγ within SA acceptance (ISR+FSR)



Differences with KKMC within 0.5% for most of the spectrum

Phokhara and McMule agree very well!

μμγ within SA acceptance (ISR+FSR)



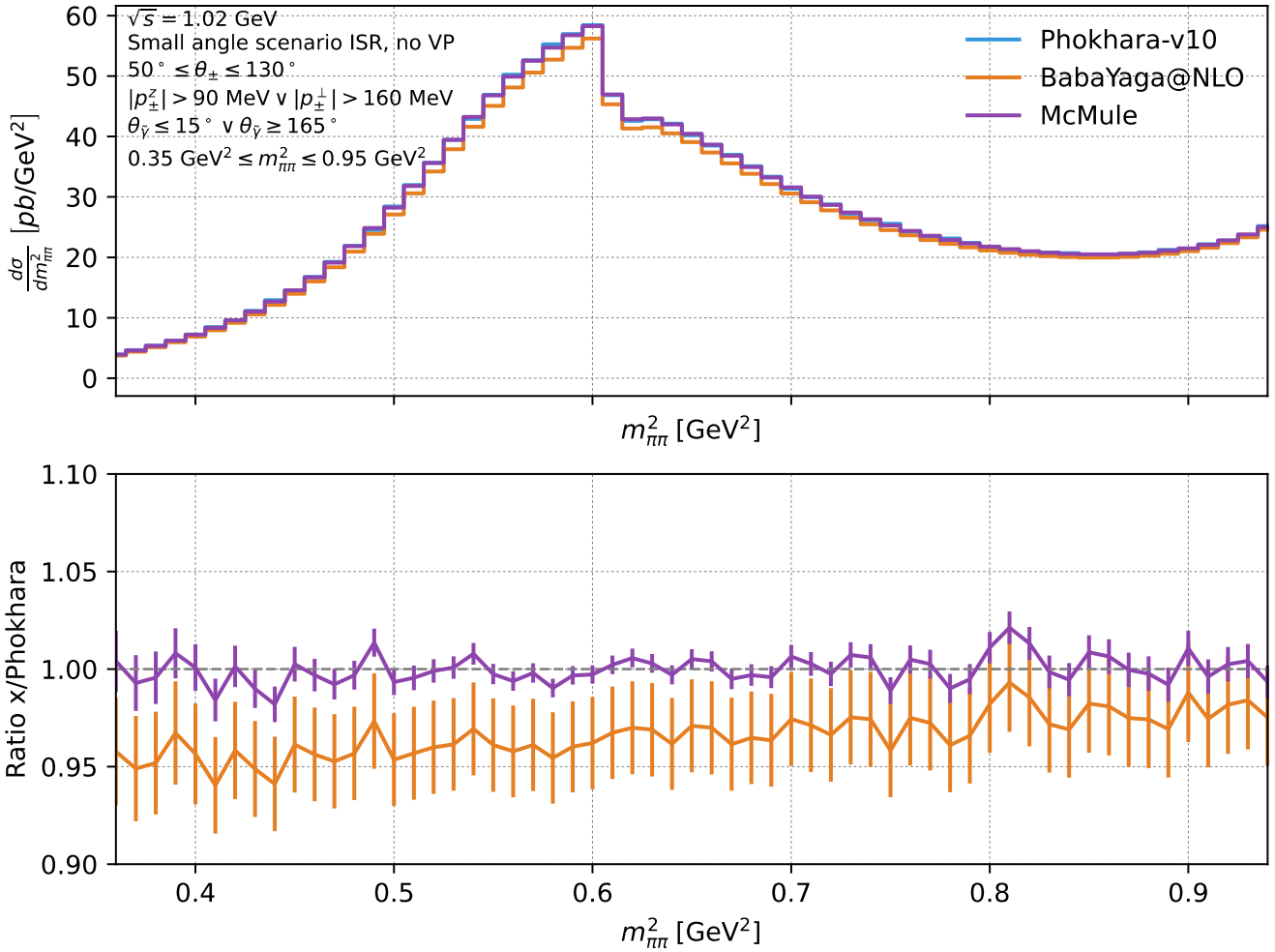
BaBayaga@NLO (LO+PS) not designed for ISR. Plans from BaBayaga to have NLO+PS

At the TI workshop in Japan we showed many comparisons:

- $\pi\pi\gamma$ – only ISR:
  - comparison of Phokhara with MCMULE inclusive and SA acceptance cuts
  - Comparison of Phokhara with MCMULE and AFKQED for LA with acceptance cut and after mtrk
  - We compared Phokhara also with BaBayaga@NLO (LO+PS) but agreement unsatisfactory

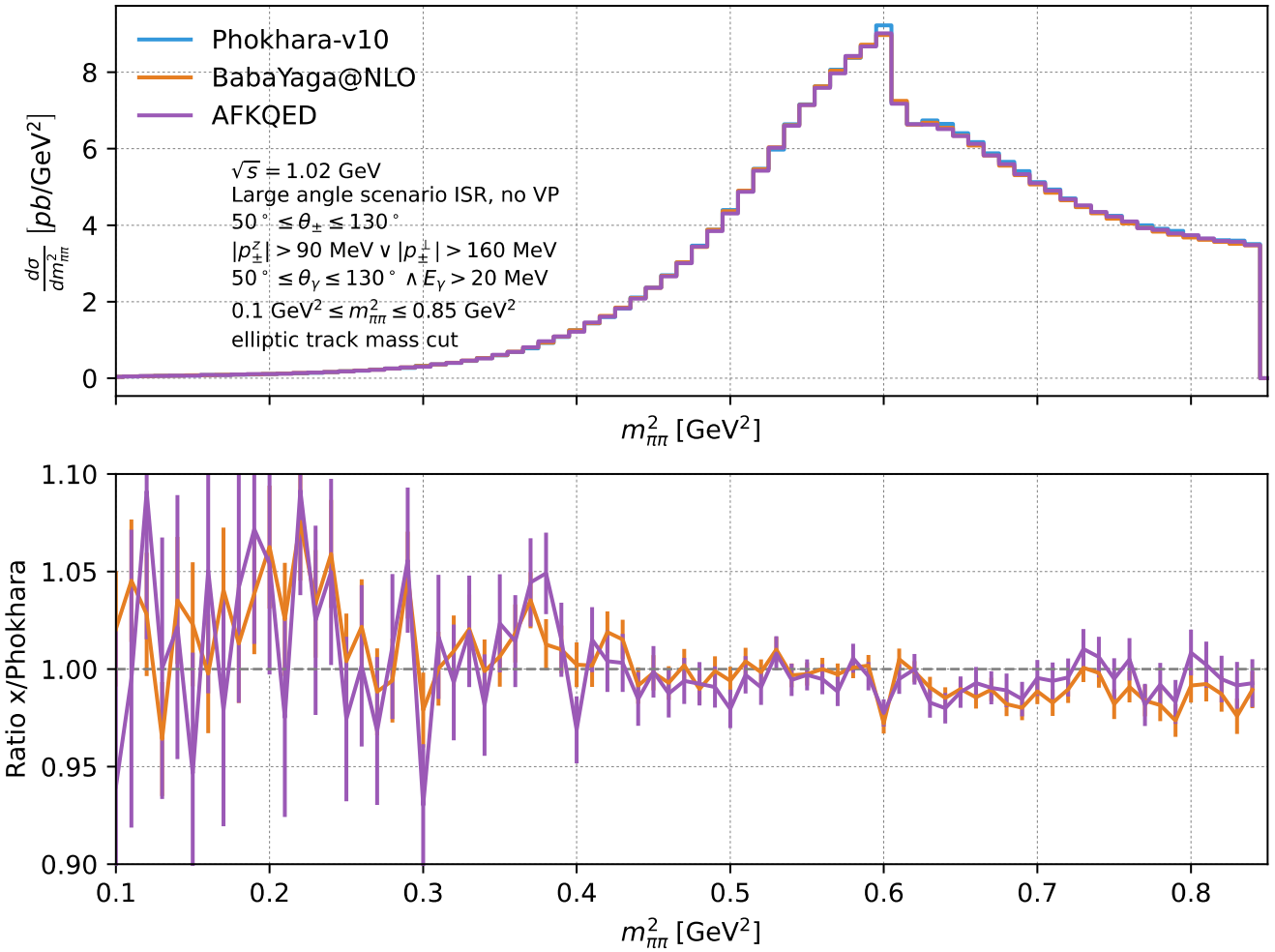
All the comparisons done with VP off

$\pi\pi\gamma$ within SA acceptance (ISR)

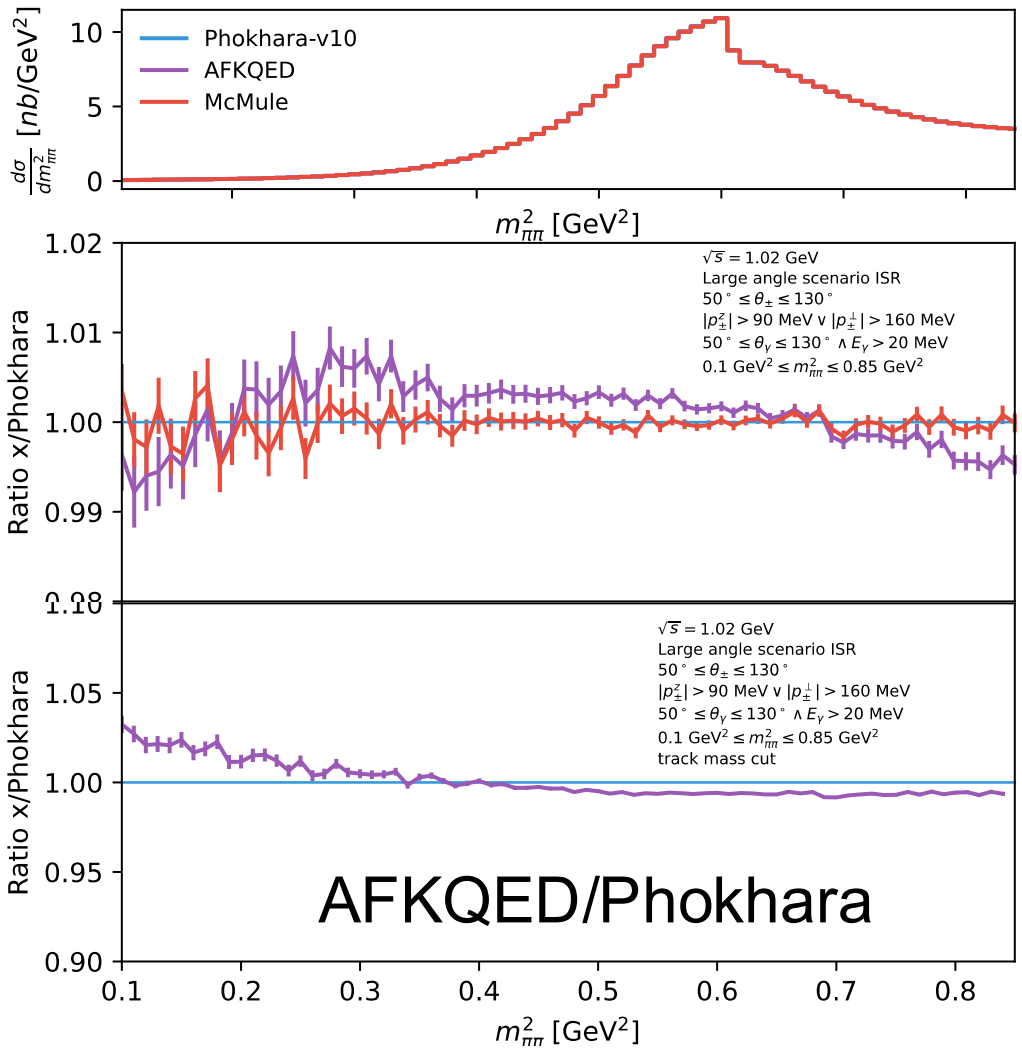


Excellent agreement btw Phokhara and McMule. Differences with BaBayaga@NLO due to non designed BaBayaga@NLO for ISR

$\pi\pi\gamma$ analysis LA and MTRK cut (ISR)



$\pi\pi\gamma$ analysis LA (ISR) updated plot



Only angular acceptance

With MTRK cut

MC status in Japan:

CODE	mmg	ppg	Comments (matrix element, FSC)
Phokhara	NLO	NLO	missing exponentiation, FxsQED
AFKQED	LO +CS	YFS	?
BaBayaga@NLO	LO+PS	LO+PS	FxsQED, GVMD,FsQED?
KKMC	Leading NLO + CEEX	?	FxsQED
McMule	NLO	NLO ISC	FxsQED, GVMD,FsQED?
Sherpa	NLO+YFS	YFS	sQED

Desiderable:

CODE	mmg	ppg	Comments (matrix element, FSC)
Phokhara	NNLO	NNLO	exponentiation, FxsQED, GVMD,FsQED
AFKQED	LO +CS	YFS	?
BaBayaga@NLO	NLO+PS	NLO+PS	FxsQED, GVMD,FsQED
KKMC	Leading NLO + CEEX	Leading NLO + CEEX	FxsQED, GVMD,FsQED
McMule	NNLO	NNLO ISC+FSC	FxsQED, FsQED
Sherpa	NLO+YFS	NLO+YFS	FxsQED, GVMD,FsQED

Fix VP whereas is needed

Backup

"Tuned" comparisons in Japan:

- VP is switched off (to isolate ISR and FSR RC effects)
- for $\mu\mu\gamma$ ISR and ISR+FSR scenario are shown
- for $\pi\pi\gamma$ only ISR is shown (due to limitations with other generators (McMule has only ISR; AFKQED can be used in KLOE only with ISR at LA))
- Only Phokhara has been interfaced with KLOE detector simulation (GEANT) → we will **not** include detector effects (i.e. smearing on momenta) in the comparisons. This will be a next step
- There will be no comparison with (old/new) data (new KLOE analysis is blinded)