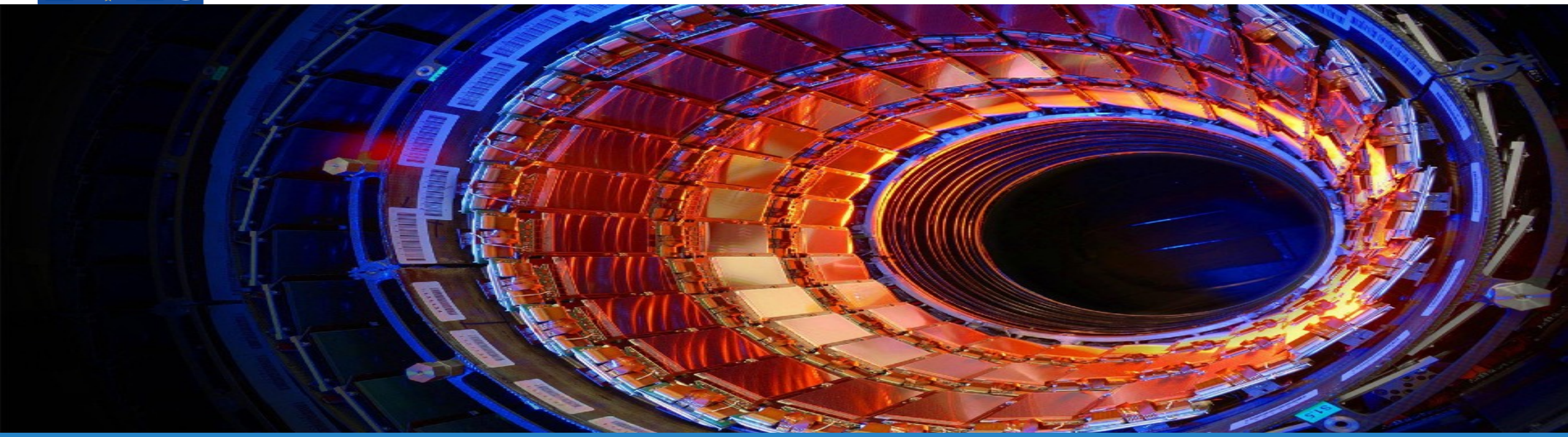


H. Schmieden
Physikalisches Institut
Universität Bonn

TA4 – Transnational Access to FTD/ELSA

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824093

Outline

1 Projects in reporting period
   - approval procedure & AU approved
   - Covid-19 situation
   - project support: “virtual access“

2 Results during reporting period
   - publications
   - “beyond state of the art“

3 Summary & next steps …

Projects in reporting period

User selection panel

R. Beck,
K. Desch,
J. Dingfelder,
D. Elsner,
S. Goertz,
F. Hügging,
B. Ketzer,
H. Schmieden,
U. Thoma

2 calls & selection meetings

Project No.	User-project acronym	Number of users	Number of man/days spent at the infrastructure
TA4-1	Eta beam asymmetry	14	0
TA4-2	Eta prime beam asym.	21	0
TA4-3	Multiquark states	17	0
TA4-4	K* photoproduction	9	0
TA4-5	Aerogel detector	4	0
TA4-6	MWPC upgrade	7	0
TA4-7	Polarised target	5	0

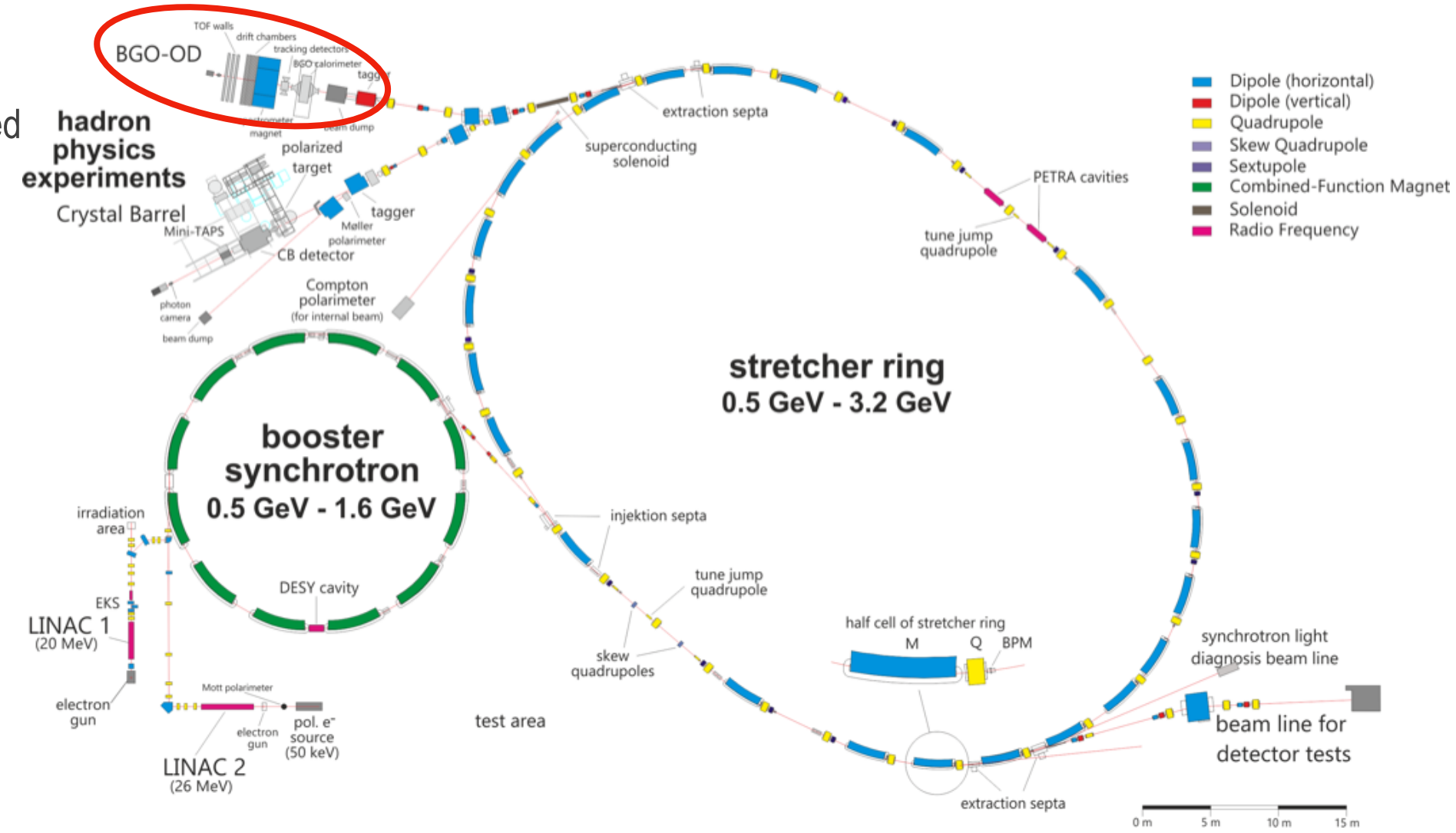
after Table 3.1

Projects in reporting period

- TA4-1 …. TA4-6 associated with BGOOD experiment / beamline

Projects in reporting period

- TA4-1 …. TA4-6 associated



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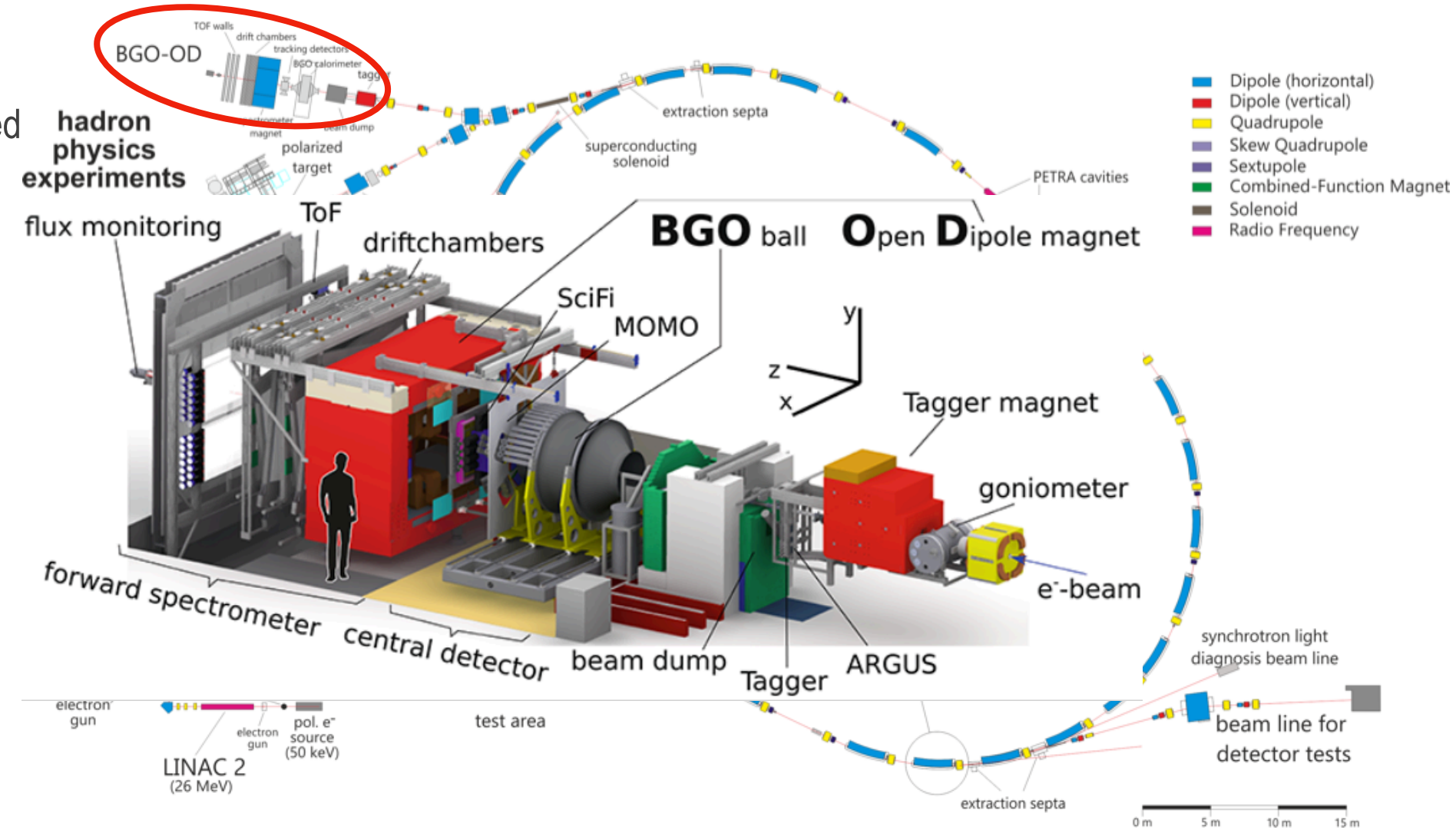

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→ planning:

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  → 672 beam hours (AU)
  [grant agreement: min. 525 during 1st 18 months]
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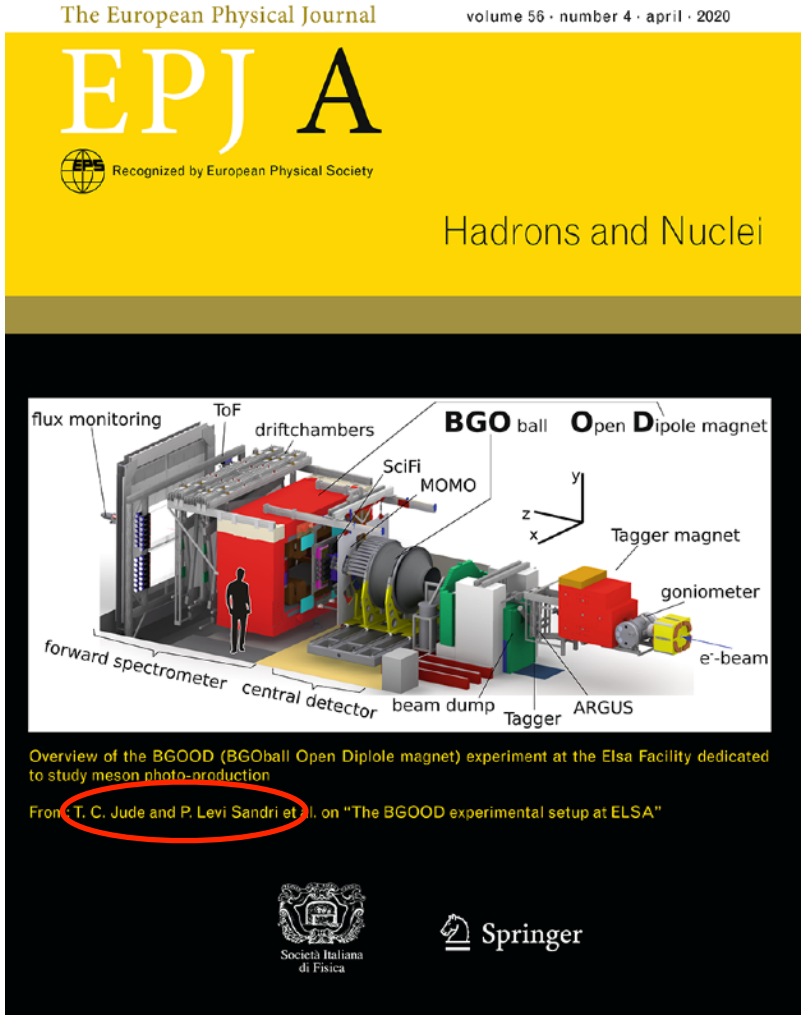
- Covid-19 Lockdown @ March 16
- University access prohibited
- lab & accelerator work shut down
- internal personnel restricted
- outside personnel strictly forbidden
- from September: ramp-up slowly
- present: changing situation of public guide lines

Results during “virtual access“

circumvent unfortunate situation: “virtual access“

(w/o using TNA funds)

- analysis of previous data
- prepare & develop analyses
- limited in statistics, BUT:
- first physics results
- publications
  - technical paper: EPJ A 56 (2020) 104
  - $K^+\Lambda$ arXiv:2006.12350 (subm. to EPJ A)
  - $K^+\Sigma$ arXiv:2006.12437 (to be subm. to PLB)



Results during “virtual access“

Highlights from TA4-3 “Multi-quark states“

- new cusp in $K^+\Sigma$ photproduction
- indication of pentaquark signal in $K^0\Sigma^0$ photoproduction
- triangle singularity in $K^+\Lambda(1405)$ photoproduction

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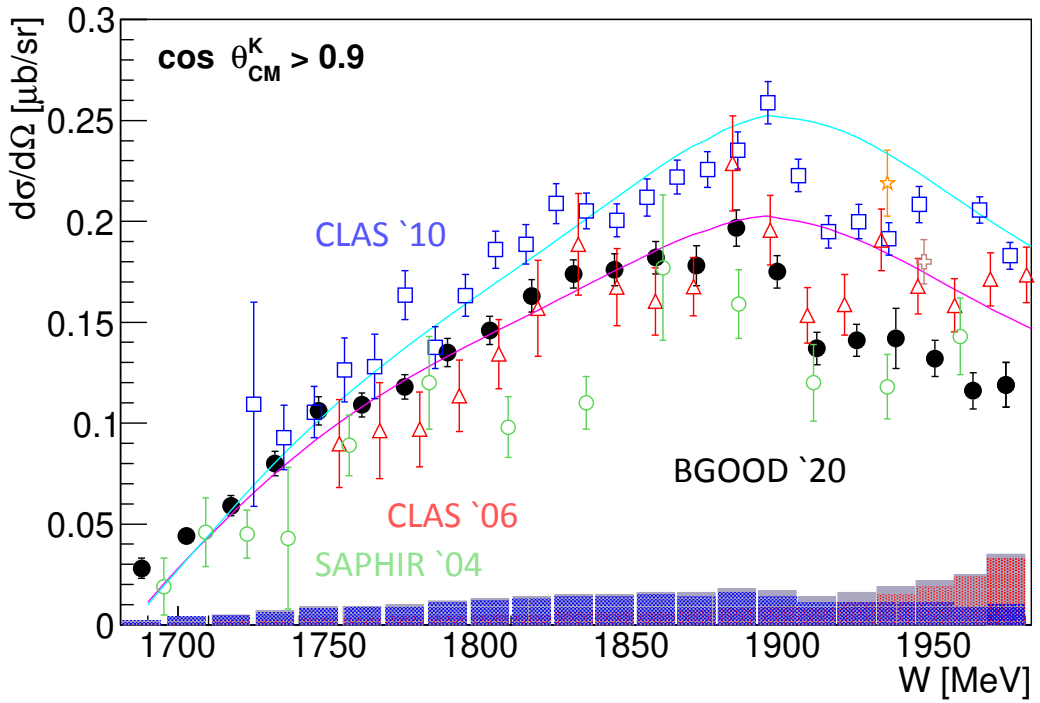

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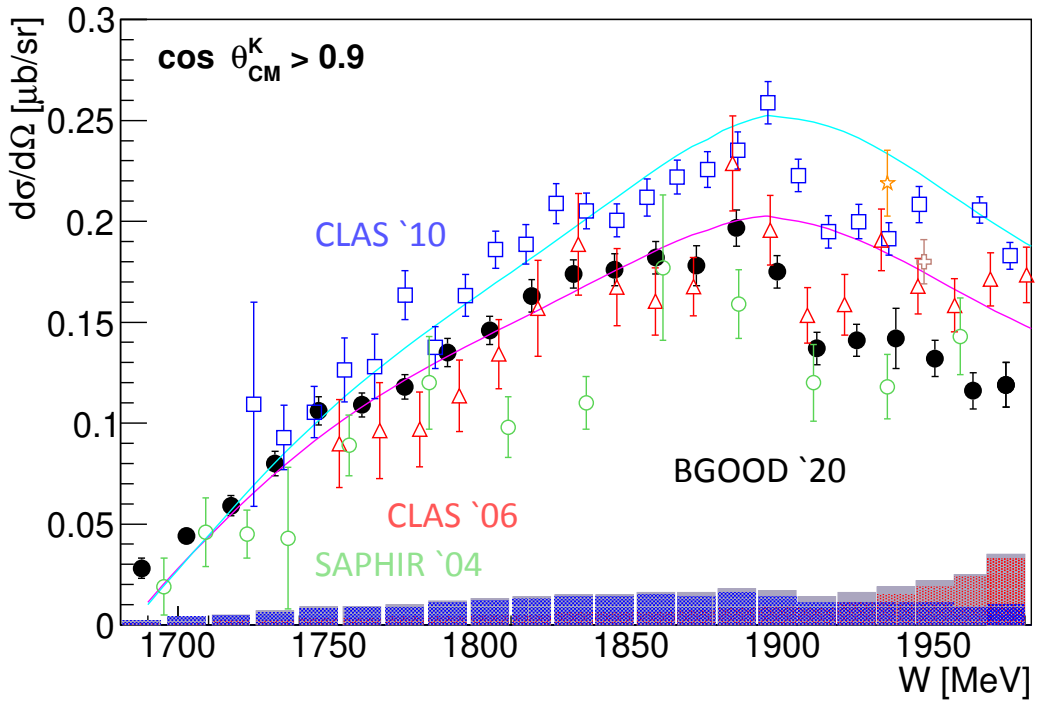

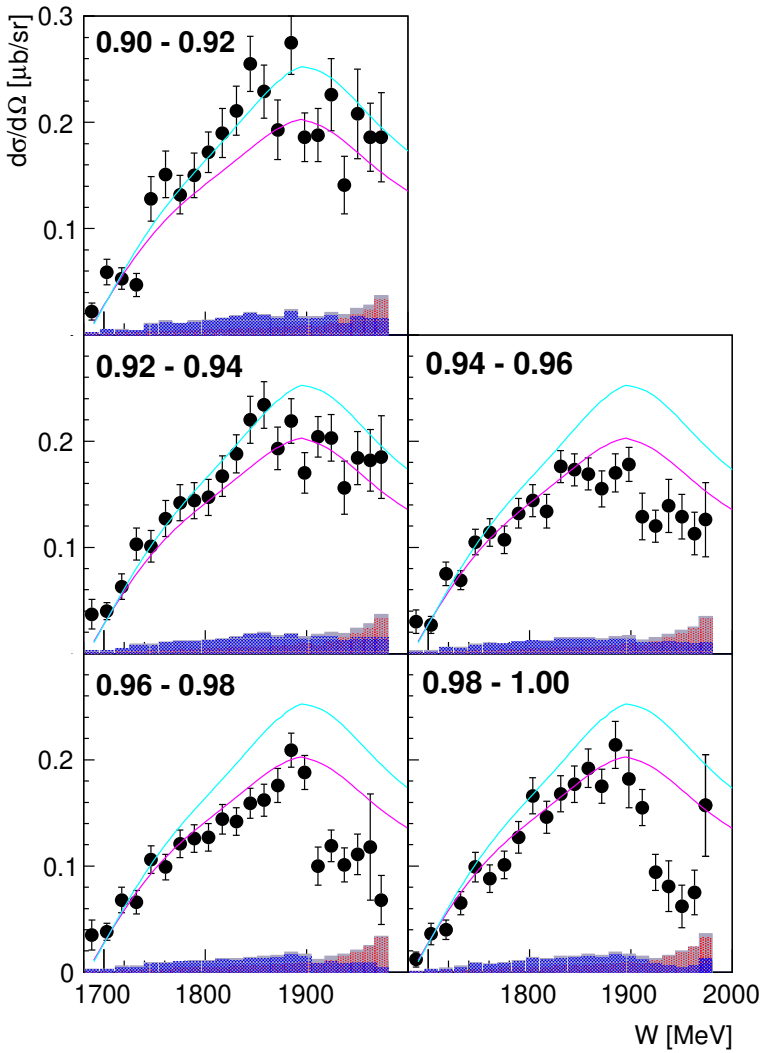

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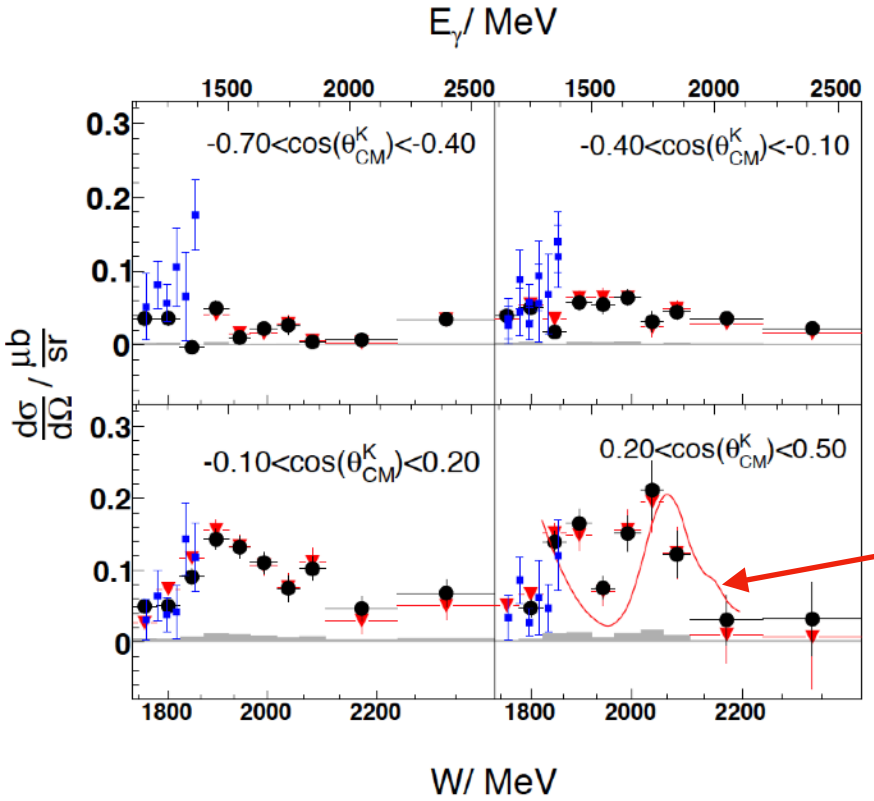

data:

C. Akondi et al. [MAMI-A2]
EPJ A 55 (2019) 202

BGOOD simulated bg fit

BGOOD real bg fit

Oset
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PLB 727 (2013)

same model which predicted LHCb pentaquark

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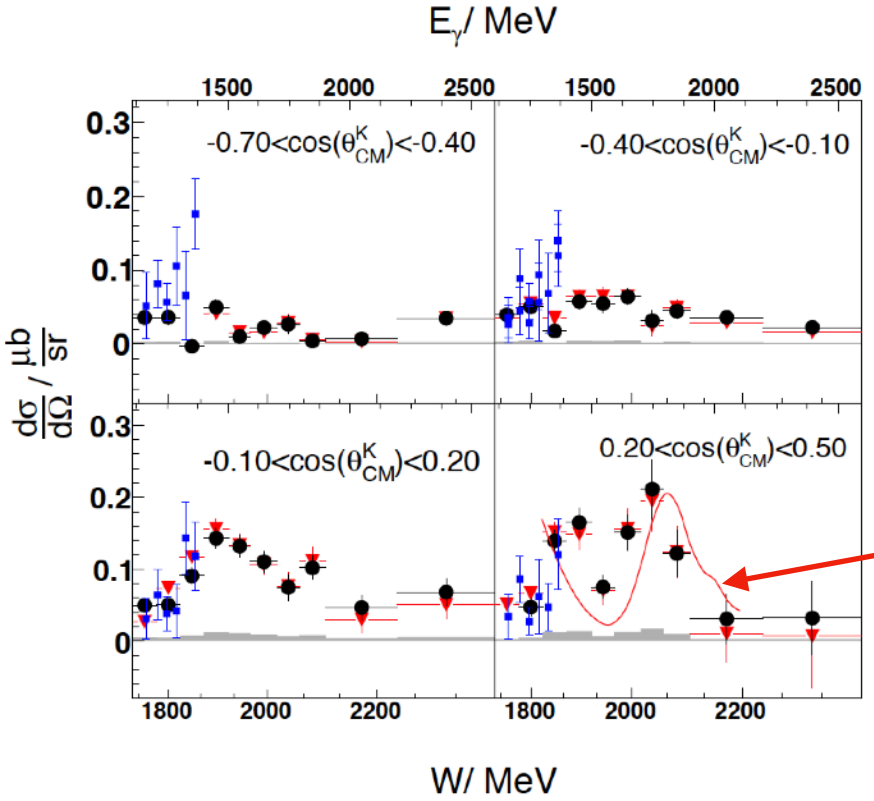

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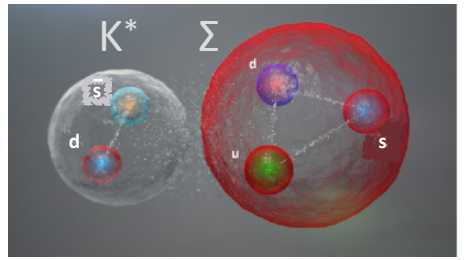

see also:

"The molecular nature of some exotic hadrons"
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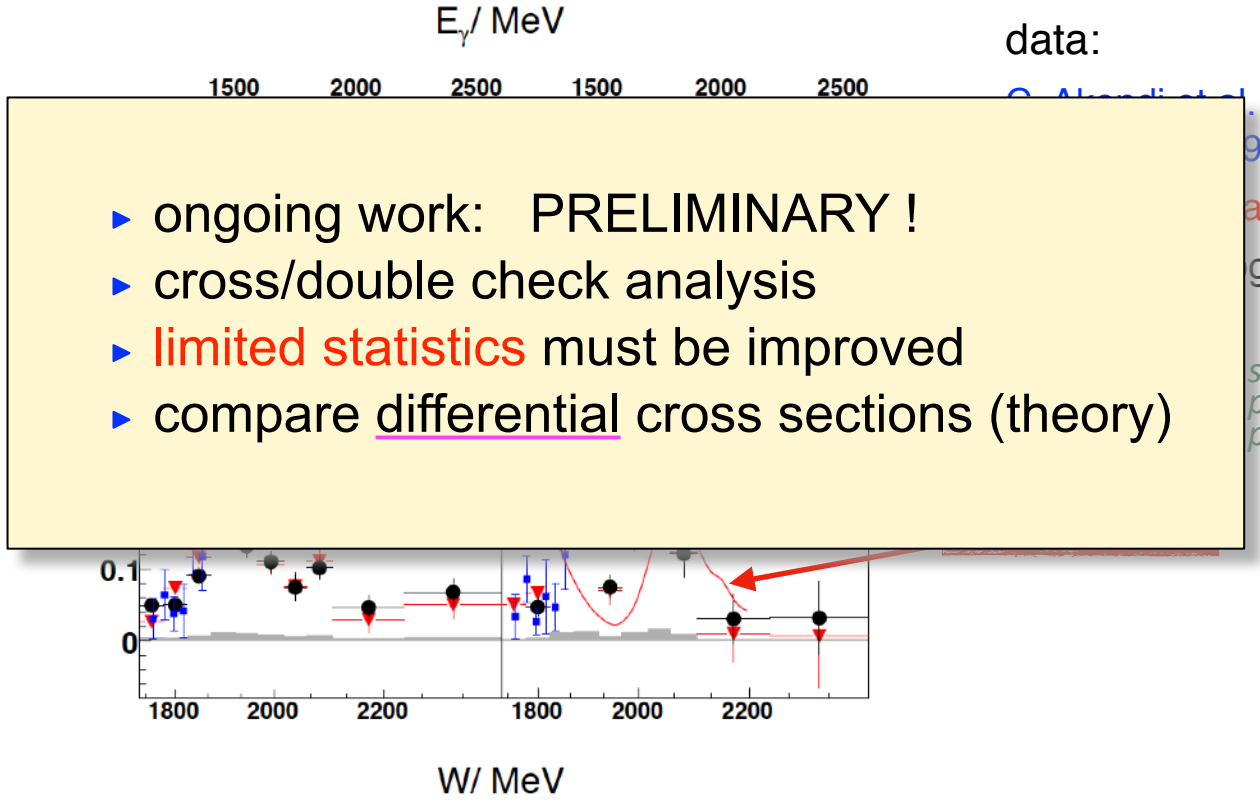

- ongoing work: PRELIMINARY !
- cross/double check analysis
- limited statistics must be improved
- compare differential cross sections (theory)

data:

[MAMI-A2]

) 202

ated bg fit

g fit

same model which predicted LHCb pentaquark

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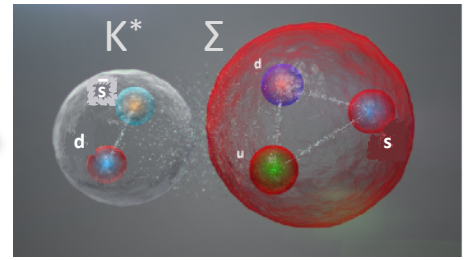

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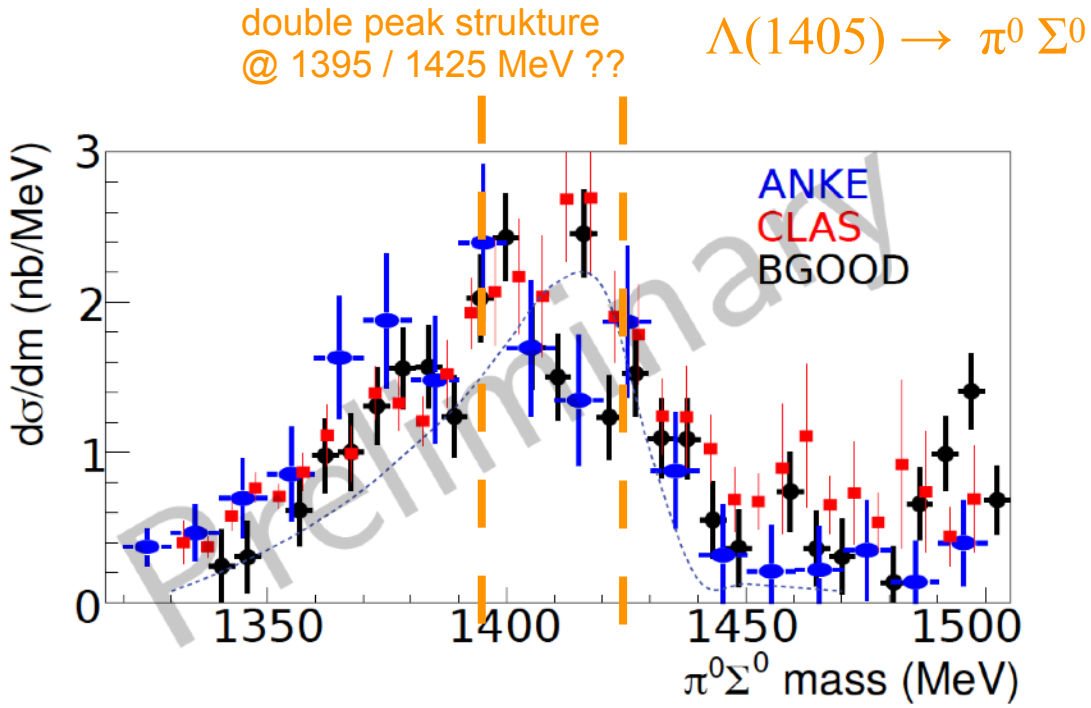

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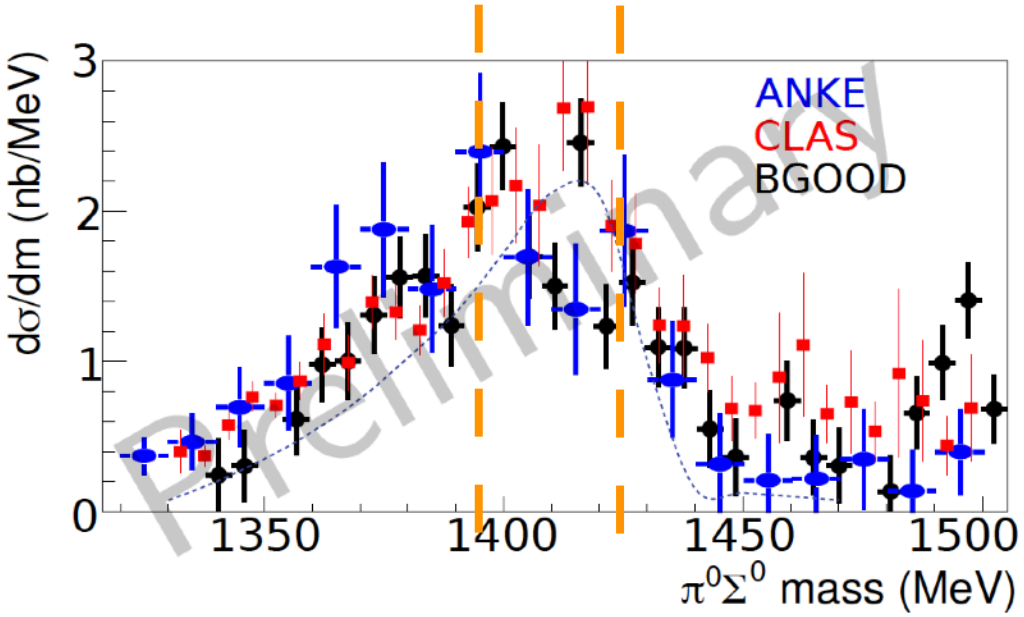

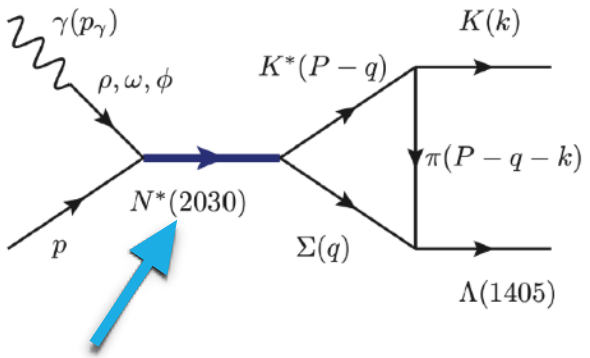

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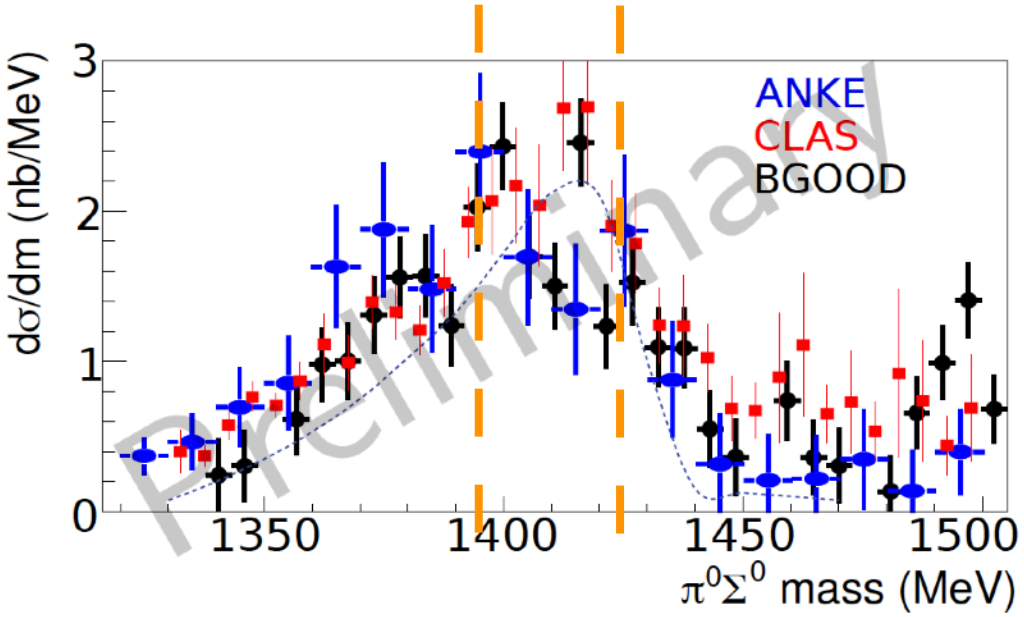
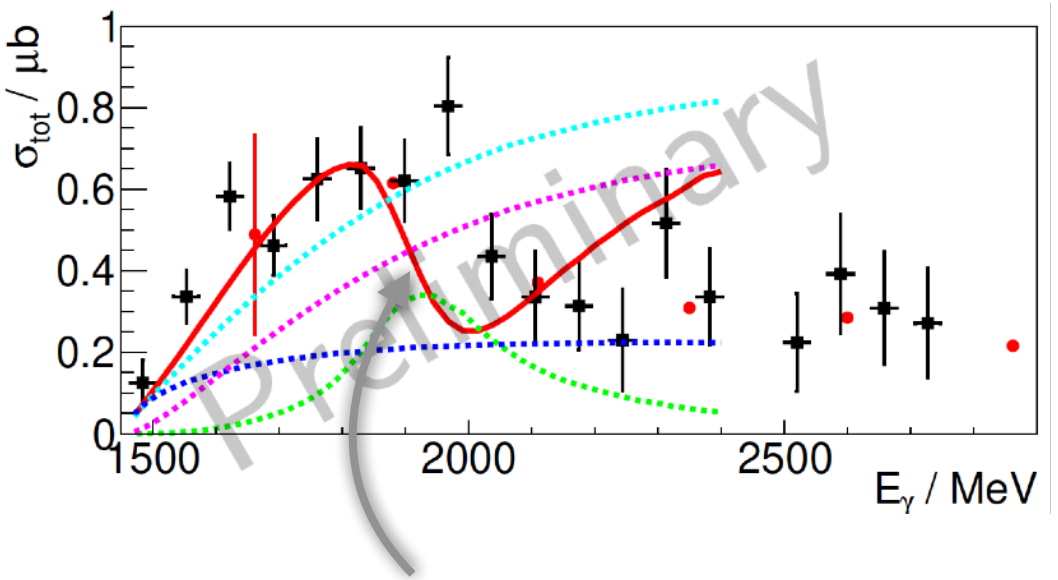
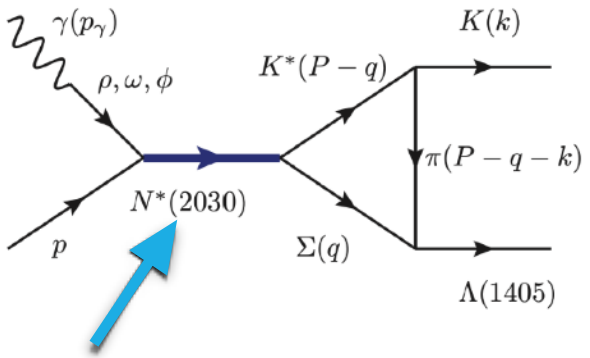




→ triangle meachanism significant



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Summary & next steps …

exciting results from “virtual access“

hope to get back to normal operation asap

- accelerator “dry run“
- BGOOD & CB experiments stand-by
- all projects stand-by
- (more) data taking urgently needed for approved projects
- *but:* Covid-19 situation evolving

  → decided w/ Italian groups to postpone hoped for Nov/Dec run to Jan/Feb