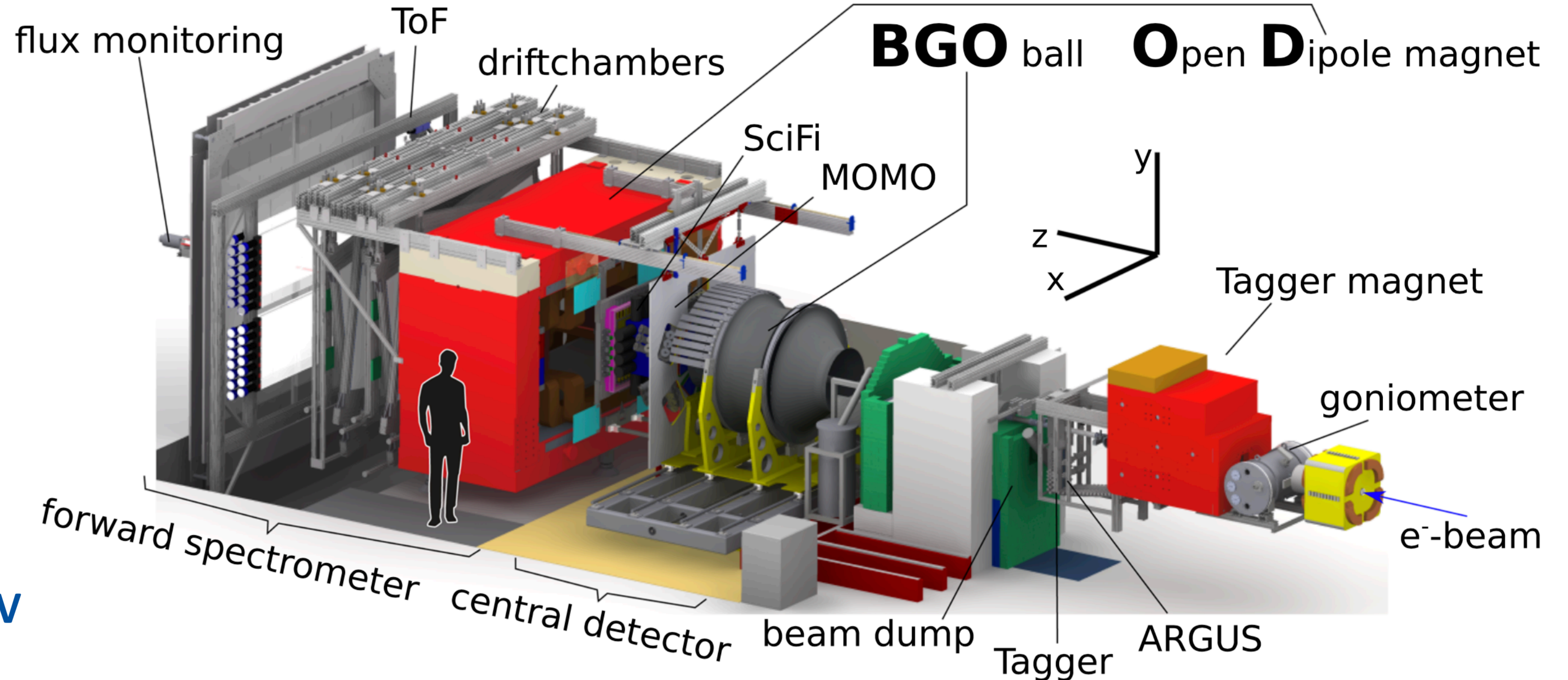


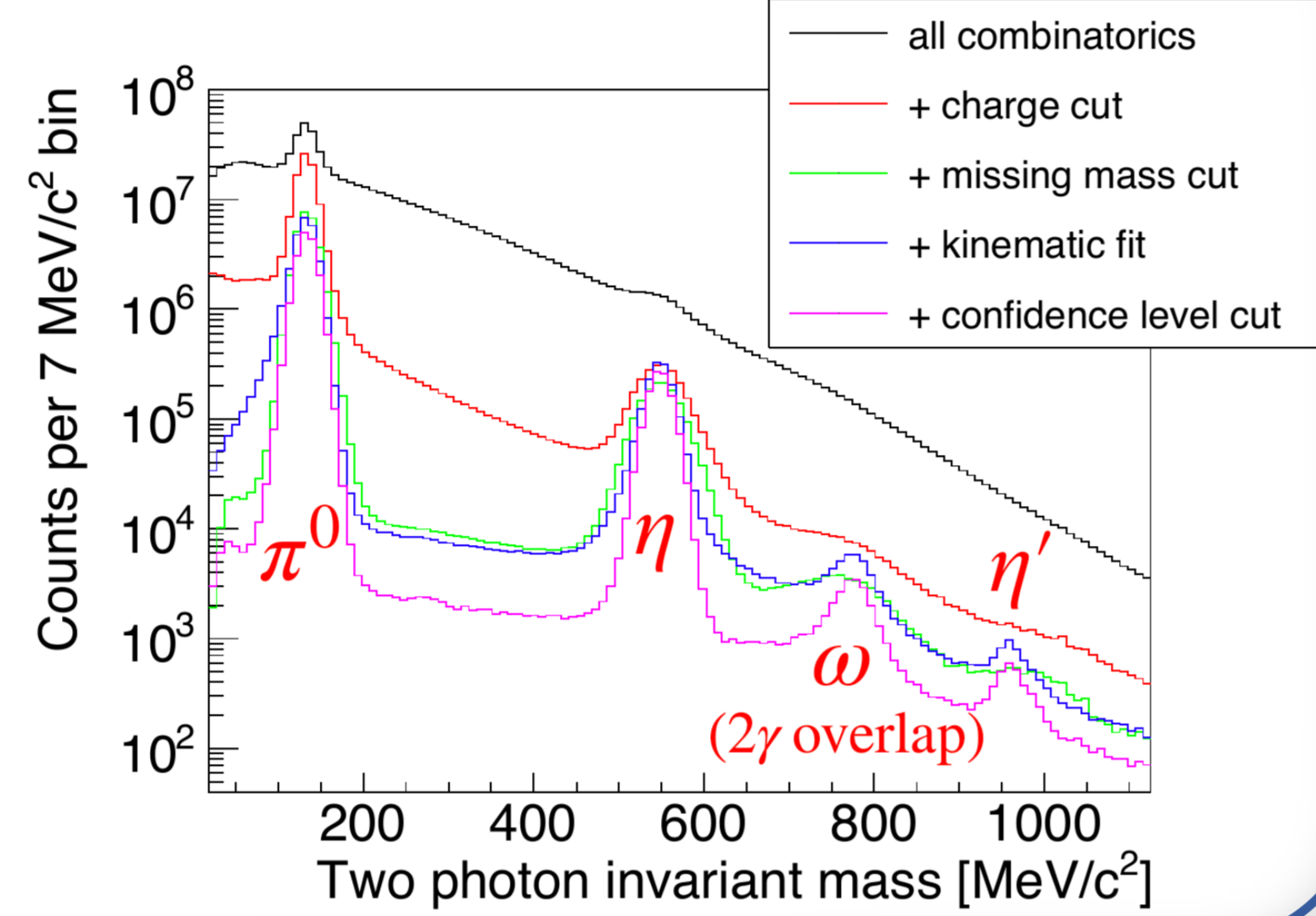
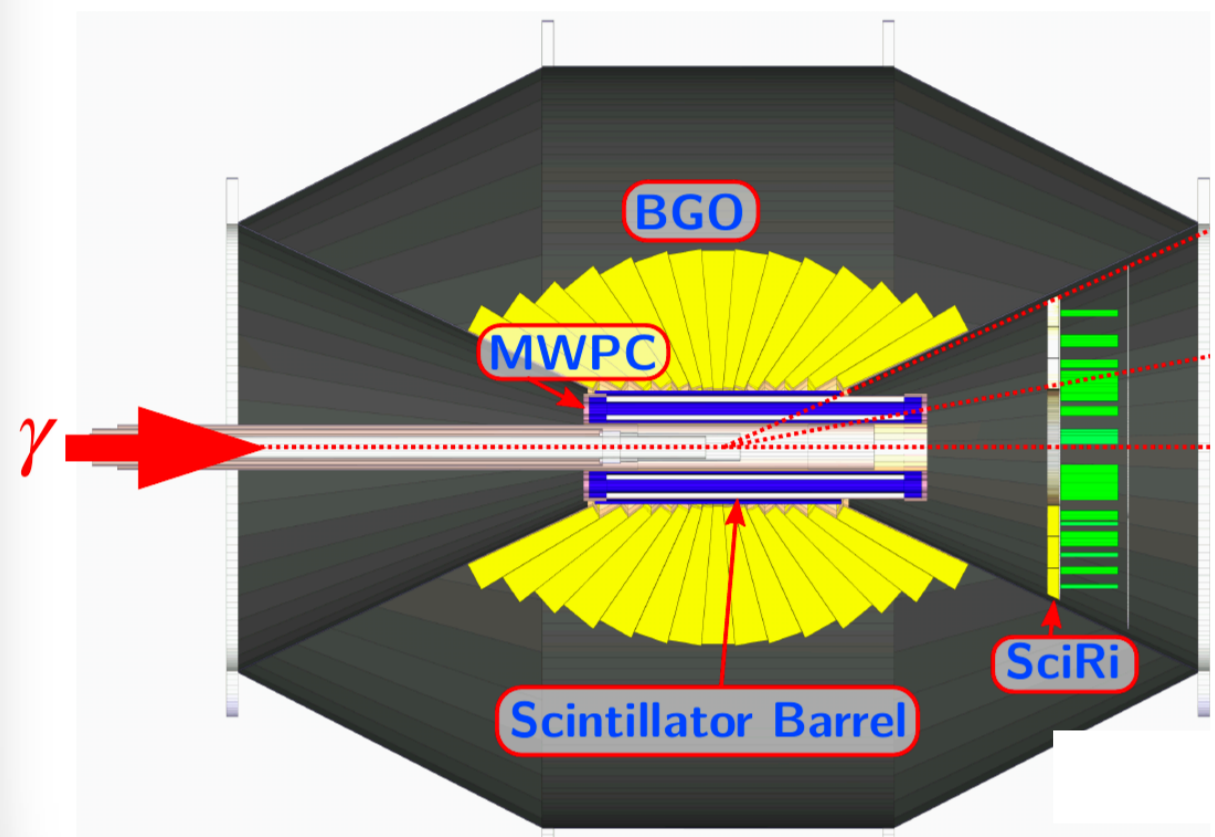
# BGOOD at ELSA

## Exotic structures of $uds$ quarks?

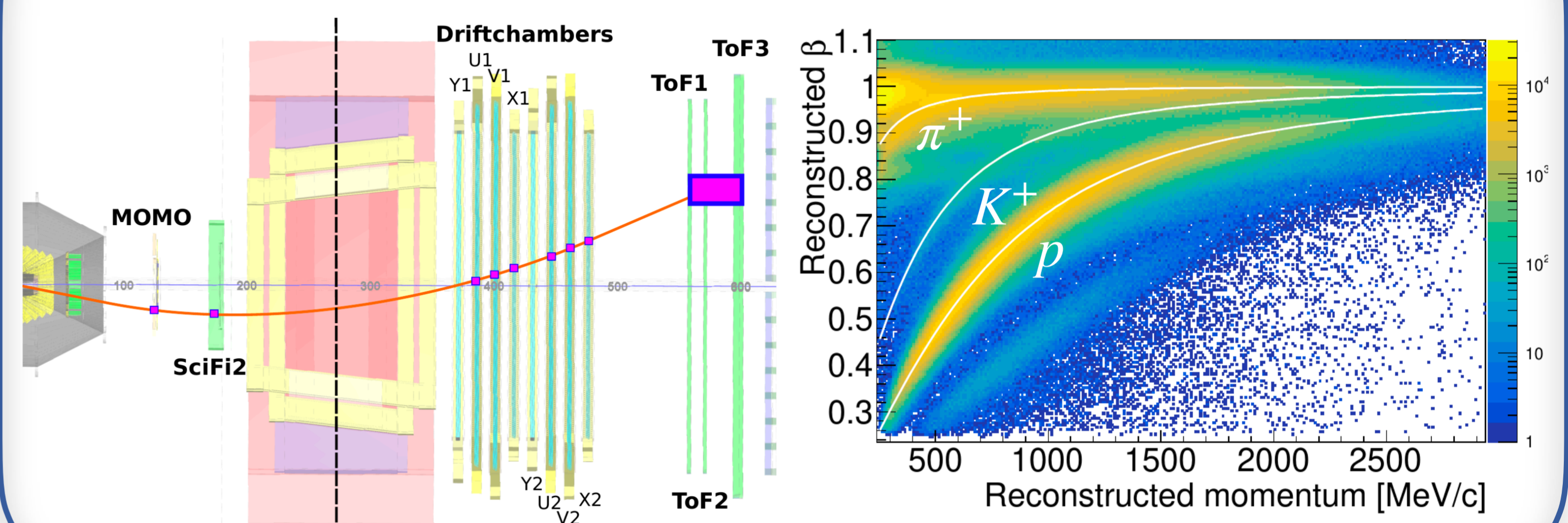
- Understanding the emergence of hadronic structure from the basic building blocks of matter
- The existence of multi-quark states beyond conventional three & two constituent quark systems has been realised in the charmed quark sector
- States in the light,  $uds$  sector (eg  $\Lambda(1405)$ ) also may have molecular meson-baryon type configurations
- To study such states requires low momentum transfer and reconstruction of mixed charged final states
- BGOOD is ideally suited - photoproduction up to 3 GeV with charged & neutral particle identification



### Central region - neutral meson identification



### Forward angles - charged particle identification



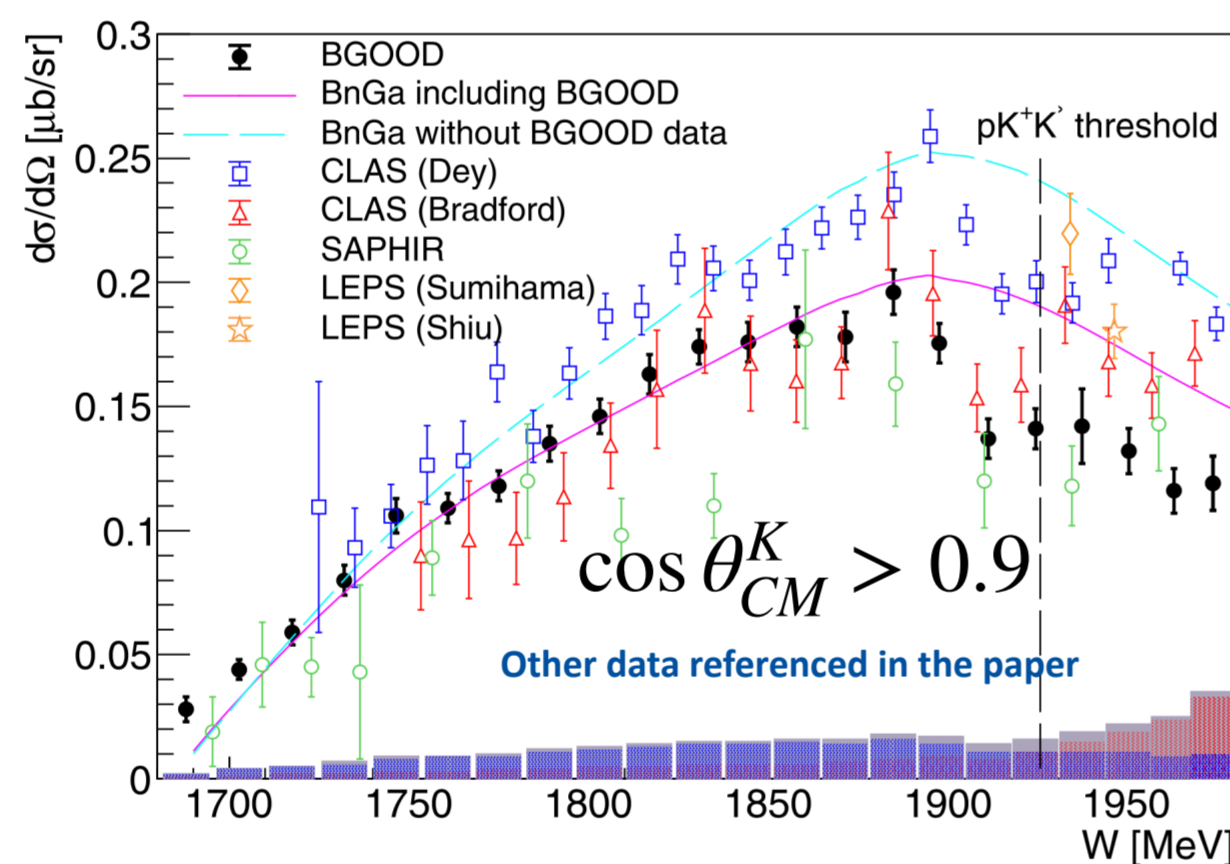
### ■ The BGOOD setup at ELSA

S. Alef et al, EPJA 56 (2020) 104

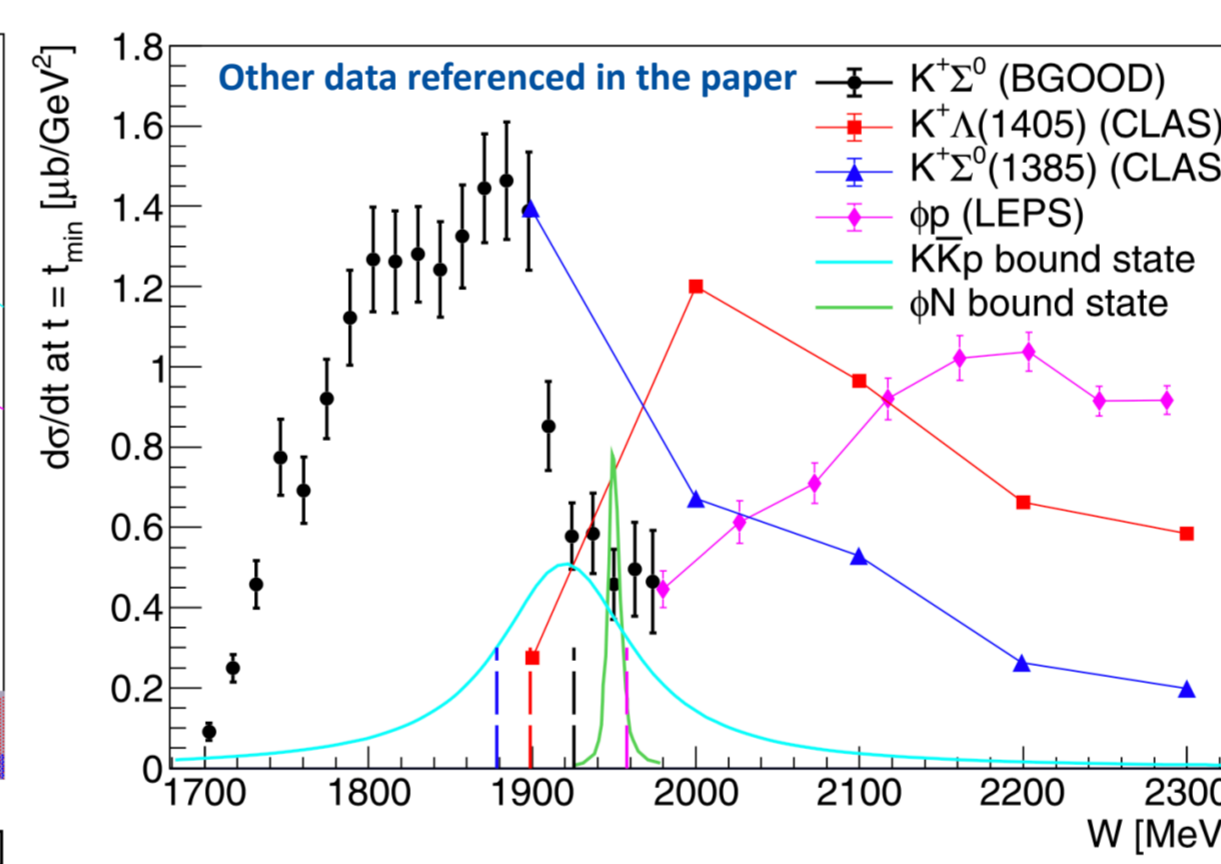


### ■ Cusp in $K^+\Sigma^0$ photoproduction

T.C. Jude et al, PLB 820 (2021) 136559



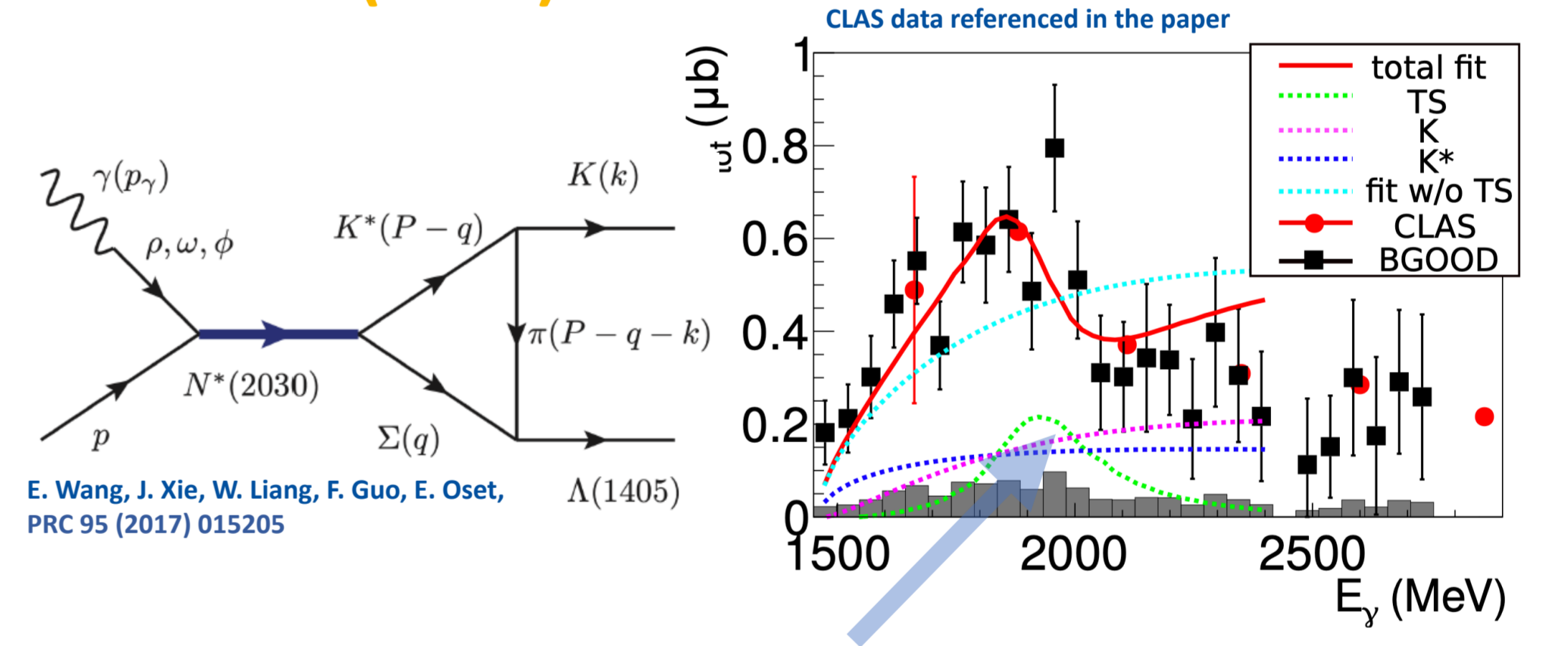
High statistics (BGOOD - black circles) reveals a cusp at the  $K^+K^-$  threshold



Most pronounced when extrapolated to exactly forward going  $K^+$

### ■ $K^+\Lambda(1405) \rightarrow K^+\pi^0\Sigma^0$

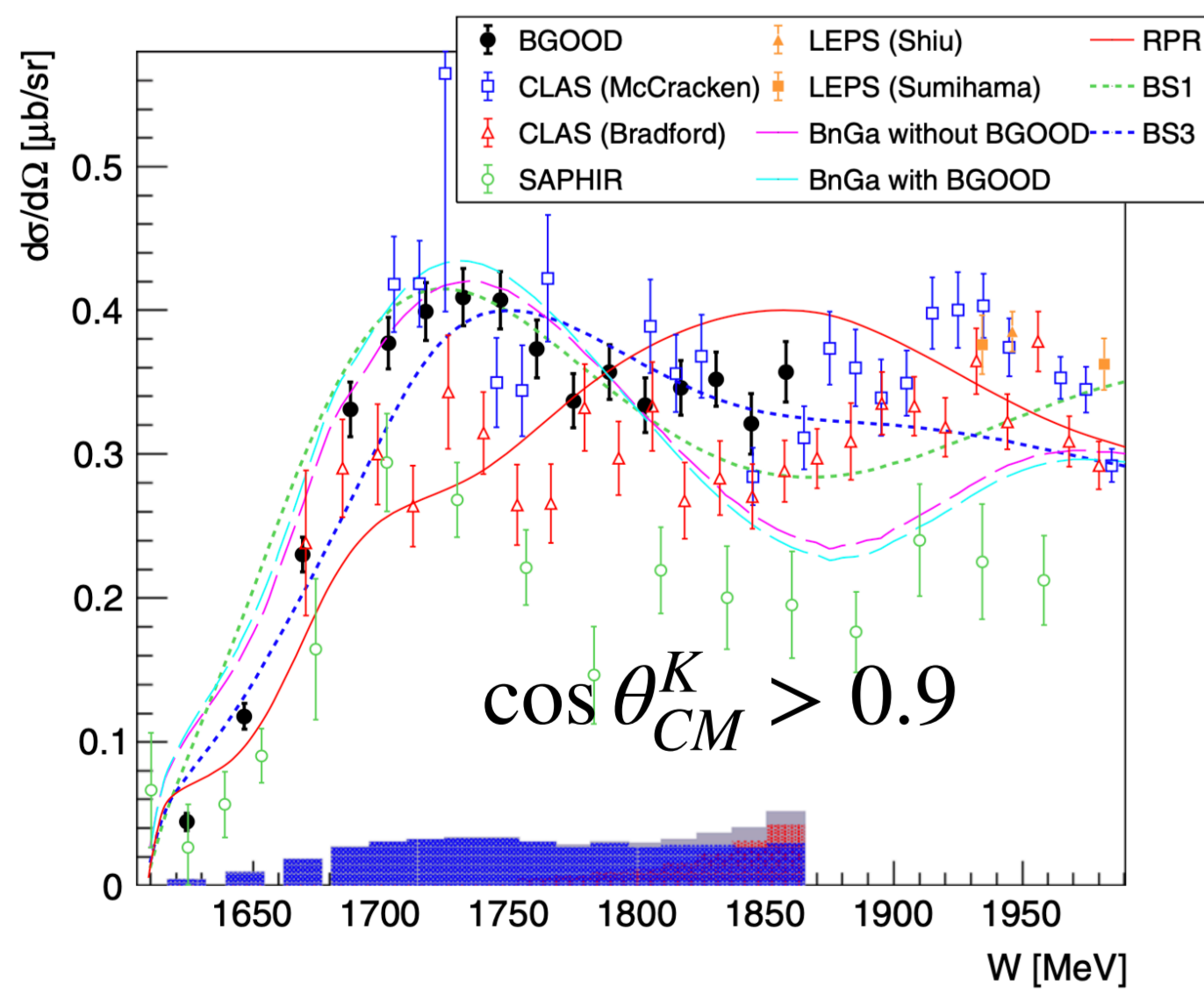
G. Scheluchin et al, arXiv:2108.12235 (2021)



Triangle singularity driven by the  $N^*(2030)$  "pentaquark"?

### ■ $K^+\Lambda$ photoproduction

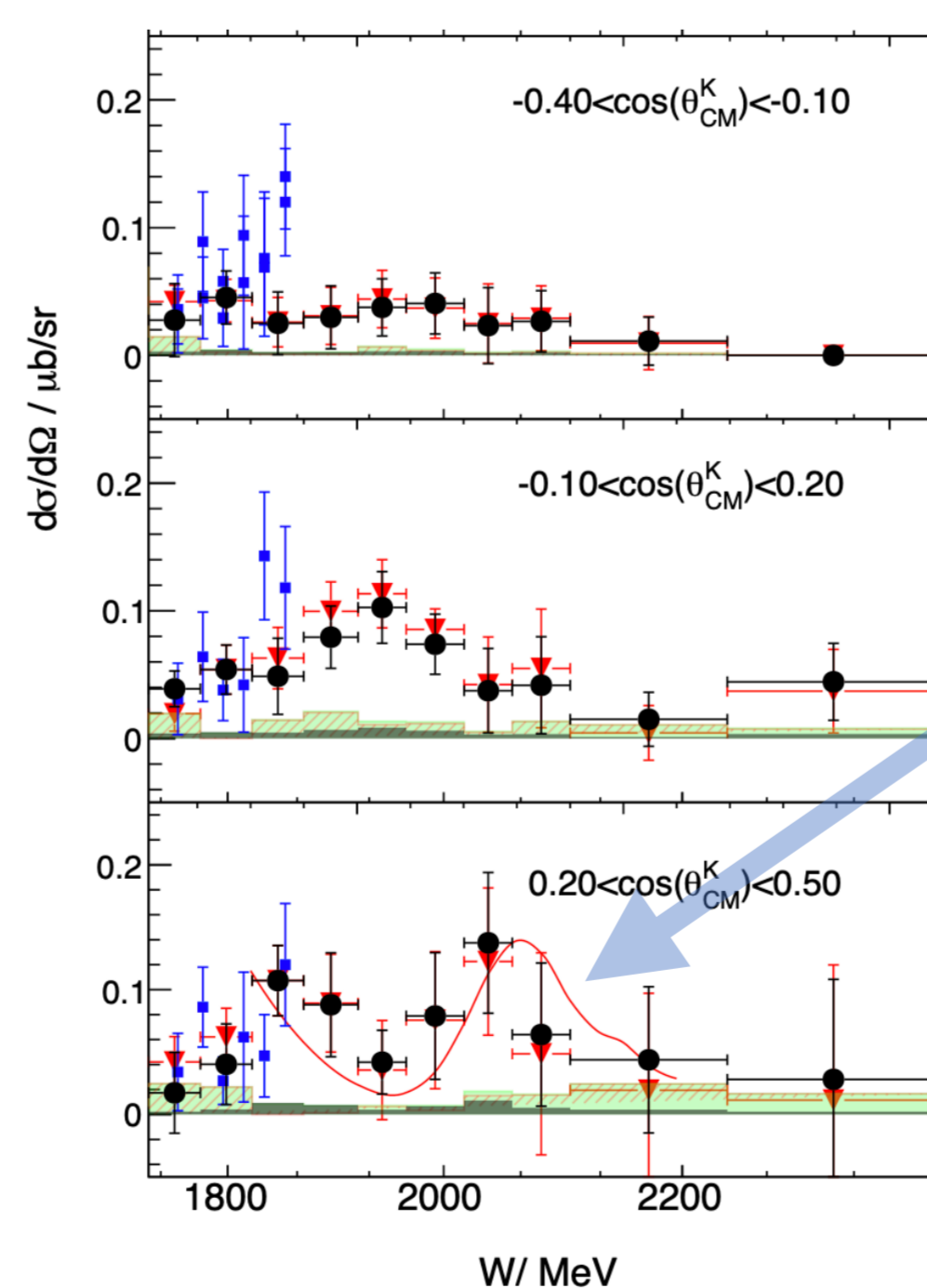
S. Alef et al, EPJA 57 (2021) 80



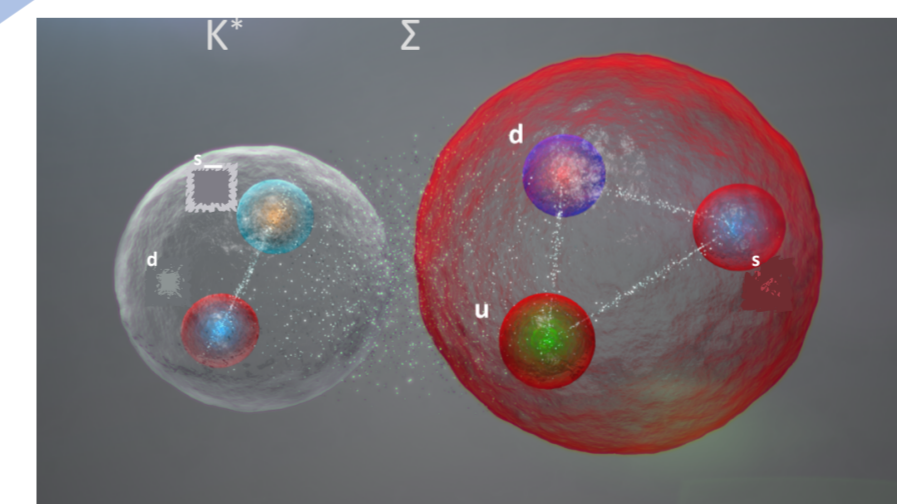
High statistics (BGOOD - black circles) - resolve discrepancies and constrains partial wave analyses

### ■ Peak in $K^0\Sigma^0$ photoproduction

K. Kohl et al, arXiv:2108.13319 (2021)

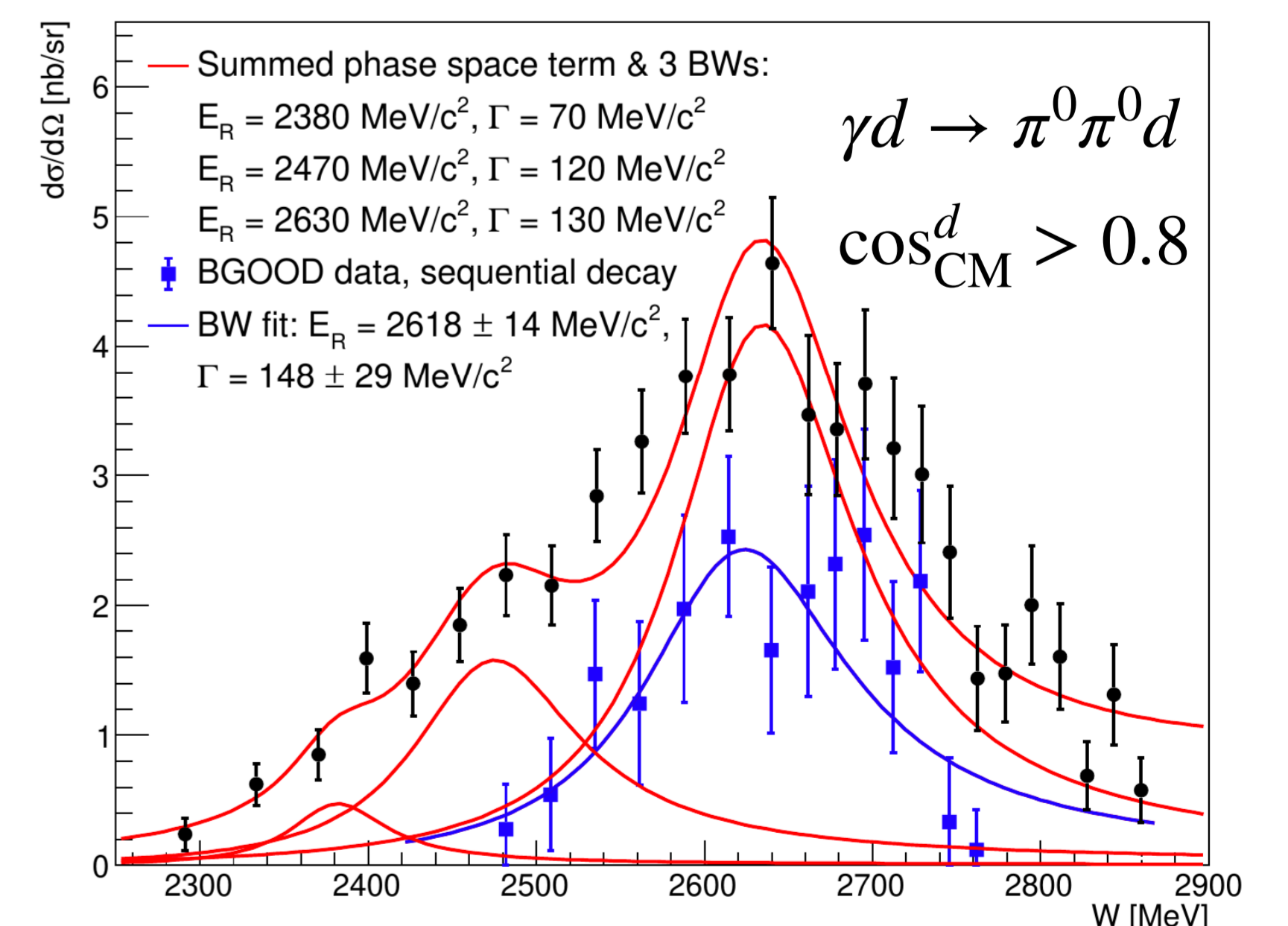


Peak at  $K^*$  threshold - same model which predicted the LHCb pentaquarks



### ■ Evidence of dibaryons?

T.C. Jude et al, to be submitted to PLB



Coherent reaction supports proposed dibaryon spectrum

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Poster designed by T.C. Jude

