

# Radiative Strength Functions

## *Discussion*

František Bečvář

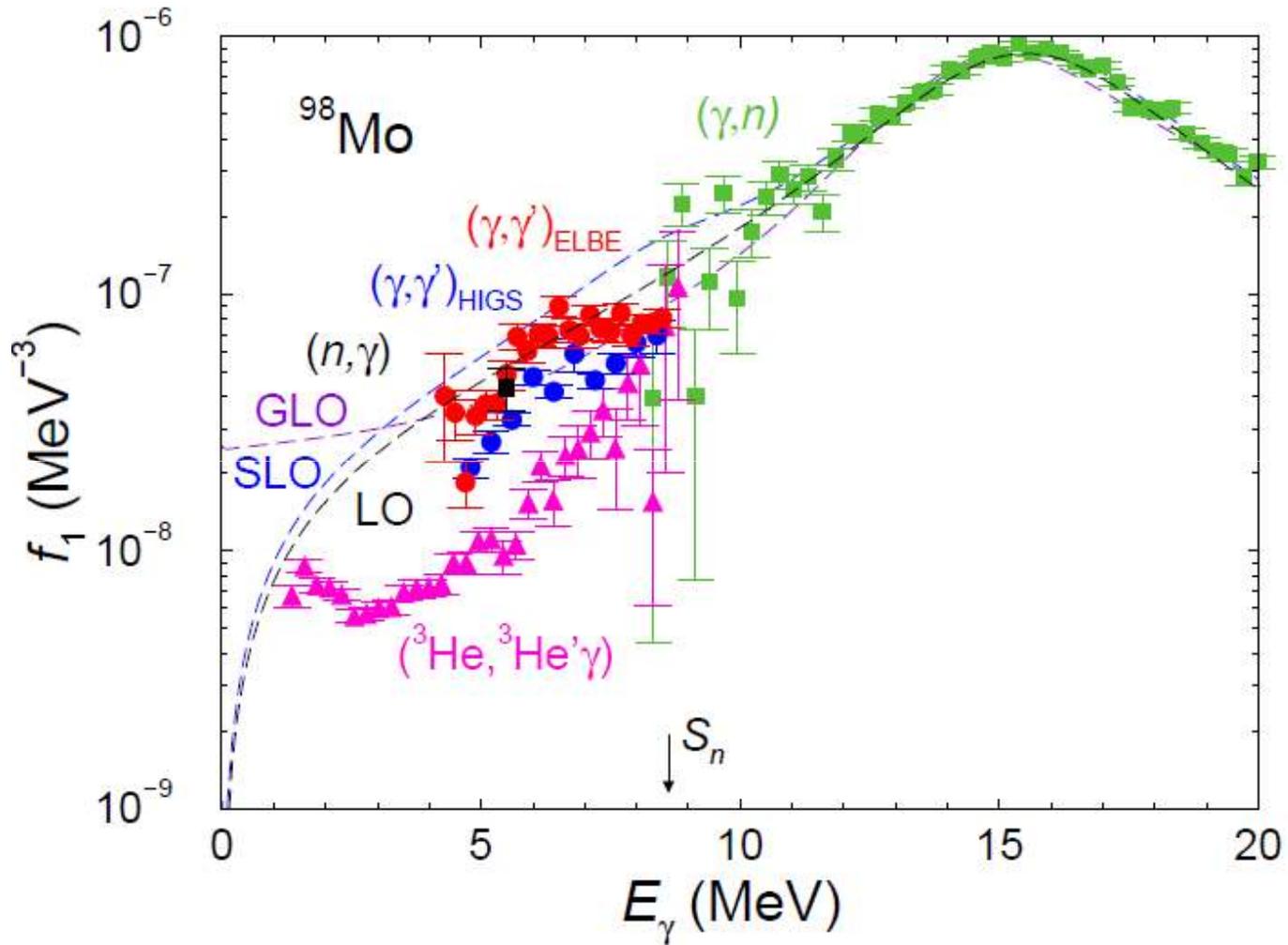
*Charles University in Prague, Czech Republic*

## Radiative Strength Functions

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Mutual inconsistency of the existing data on photon strength functions from the  $(\gamma, n)$ ,  $(n, \gamma)$ ,  $(\gamma, \gamma')$ ,  $({}^3\text{He}, {}^3\text{He}'\gamma)$ ,  $({}^3\text{He}, \alpha\gamma)$ , *etc.* reactions.

# Radiative Strength Functions



Ronald Schwengner, Gencho Rusev

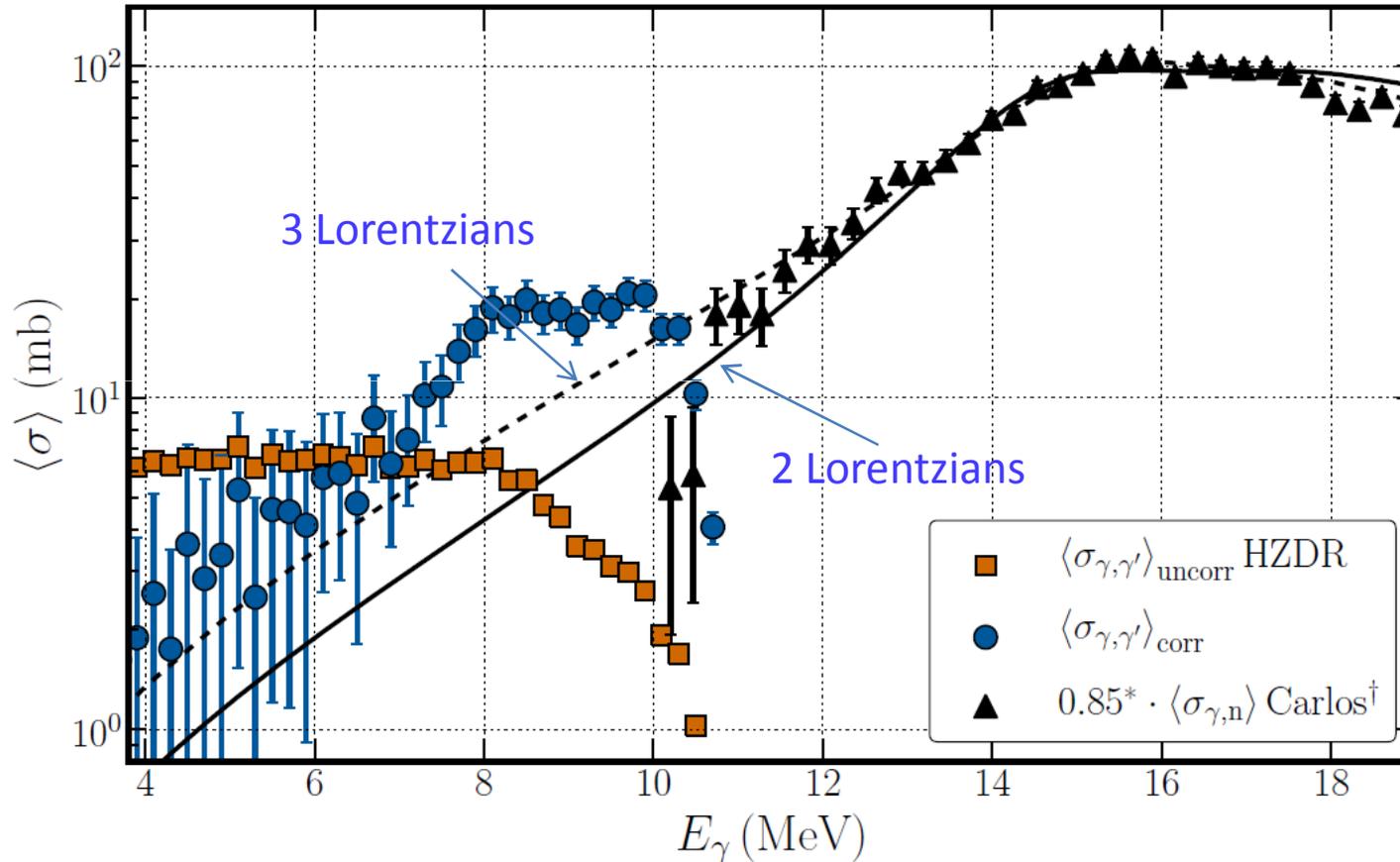
## Radiative Strength Functions

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Role of deformation and in particular triaxiality in interpreting the existing  $(\gamma, n)$ ,  $(n, \gamma)$ ,  $(\gamma, \gamma')$ ,  $({}^3\text{He}, {}^3\text{He}'\gamma)$  and  $({}^3\text{He}, \alpha\gamma)$  data on  $\gamma$ -soft nuclei in terms of photon strength functions

# Radiative Strength Functions

## Average Photon Cross Sections $^{78}\text{Se}$



Ralph Massarczyk

## Radiative Strength Functions

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### *Three closely related questions:*

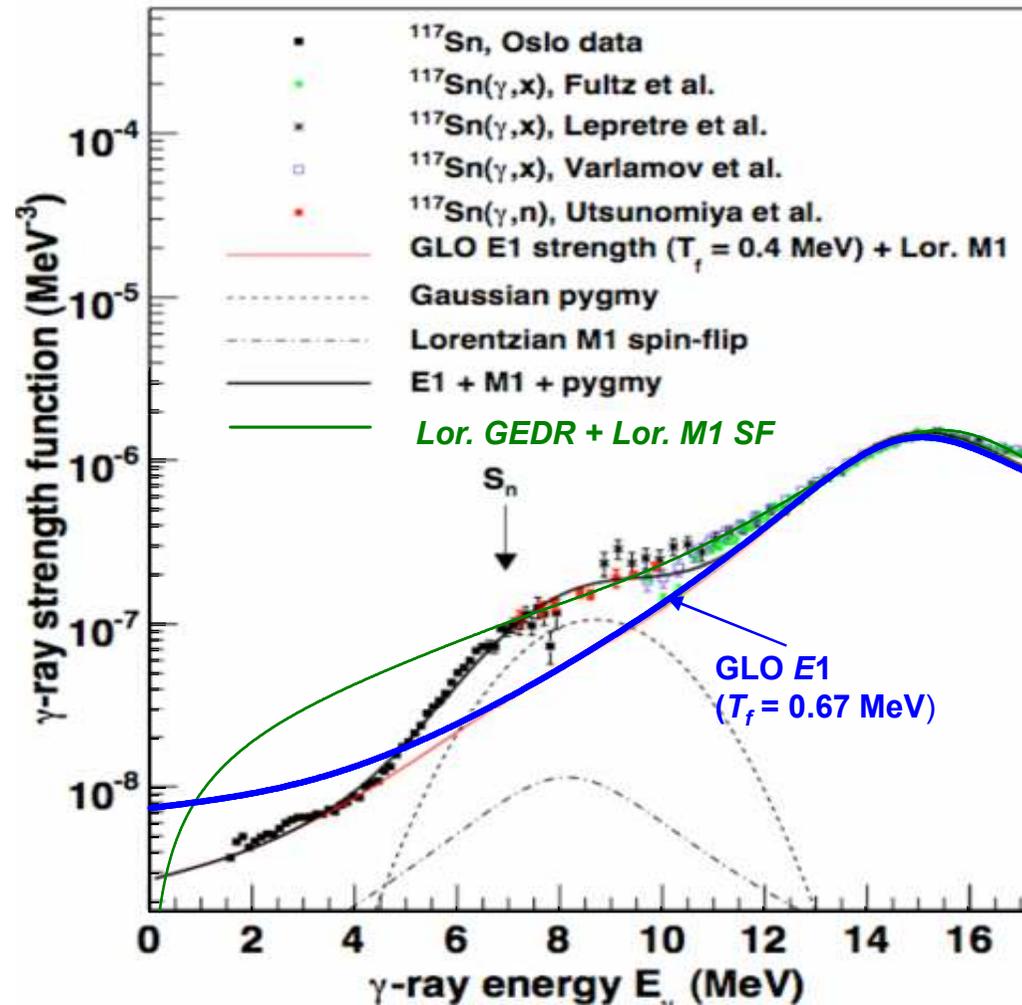
Is the  $E1$  PSF  $T$ - and/or  $E_{\text{exc}}$ -dependent?

Is the width of the  $E1$  GDR  $E_{\gamma}^2$ - and  $T^2$ - dependent?

Is the validity of the widely accepted GLO model justified?

# Radiative Strength Functions

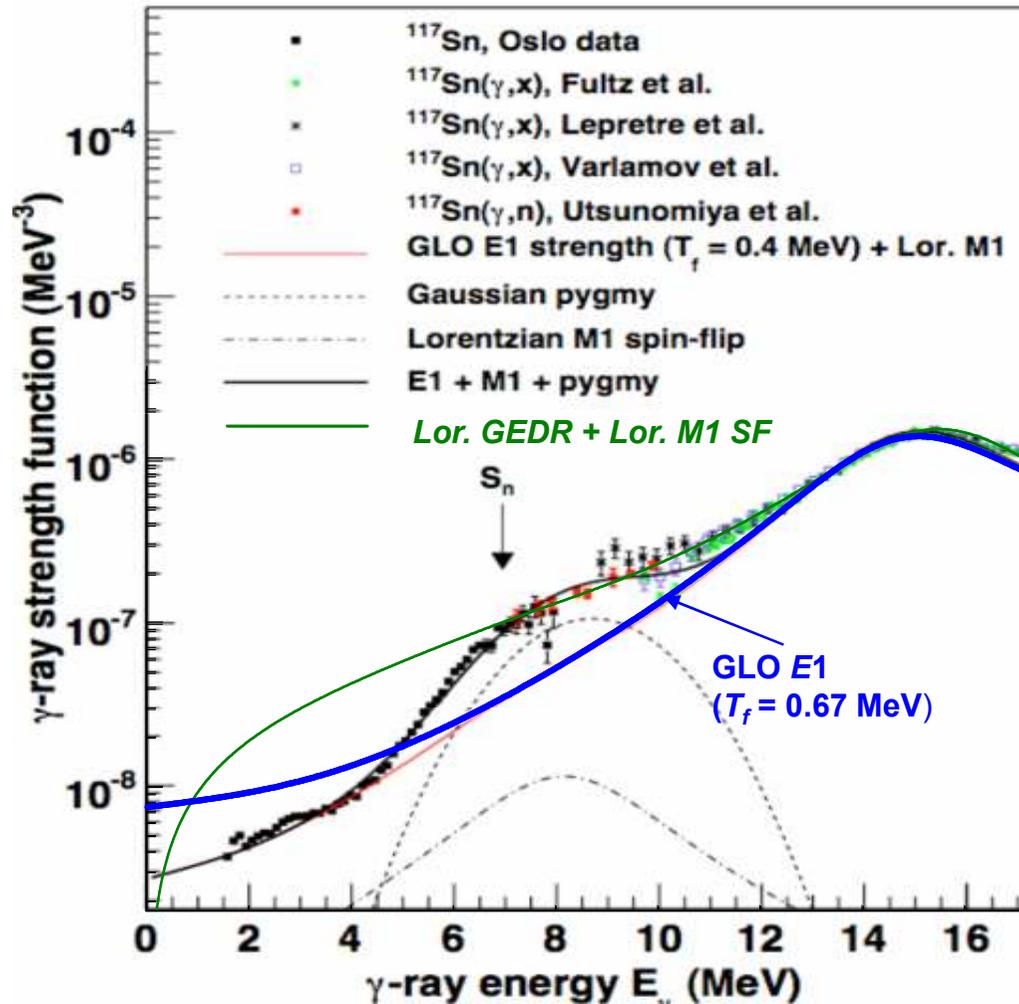
Agvaanluvsan *et al.* Phys. Rev. Lett. **102**, 162504 (2009)



mentioned by Janis Enders

# Radiative Strength Functions

Agvaanluvsan *et al.* Phys. Rev. Lett. **102**, 162504 (2009)



Anomalous 7 MeV  
M1 resonance  
superimposed  
on GLO E1 GDR?

or

Suppression of the  
Lorentzian GDR?

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## ***Brink Hypothesis:***

Is the behavior behind it of a generic character?

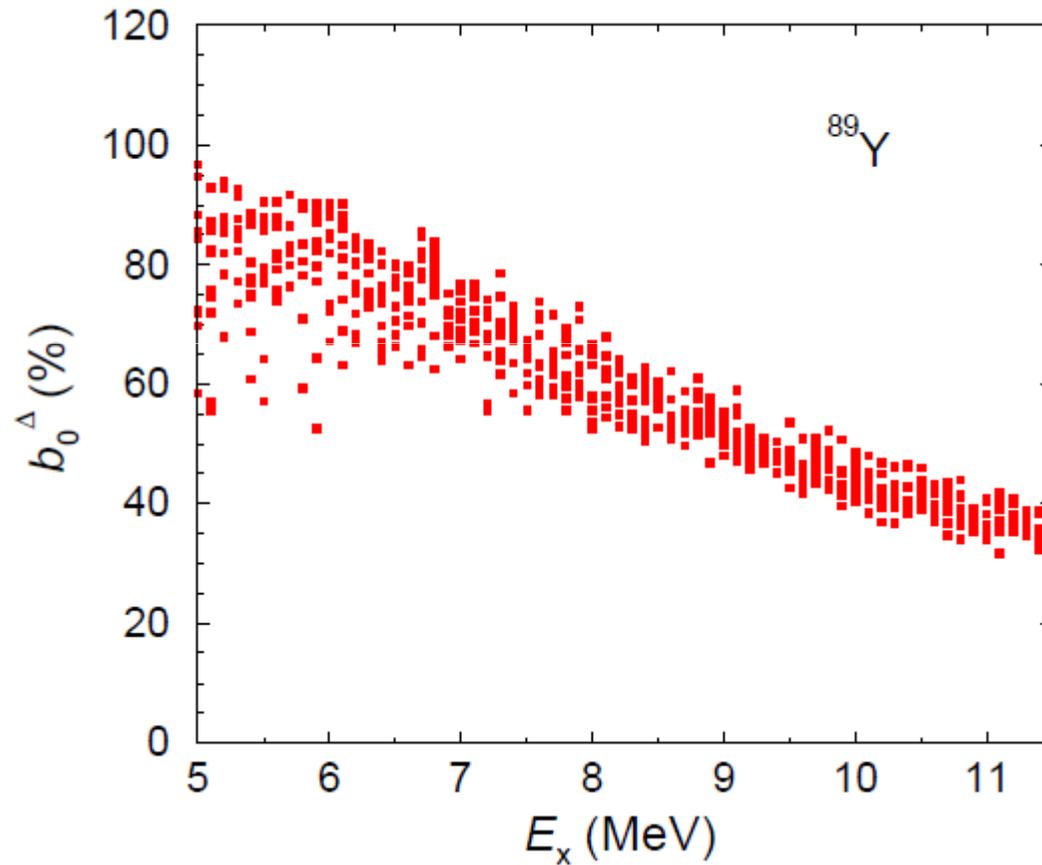
Do we have a convincing example where the BH is violated?

Are there first principles justifying its validity?

# Radiative Strength Functions

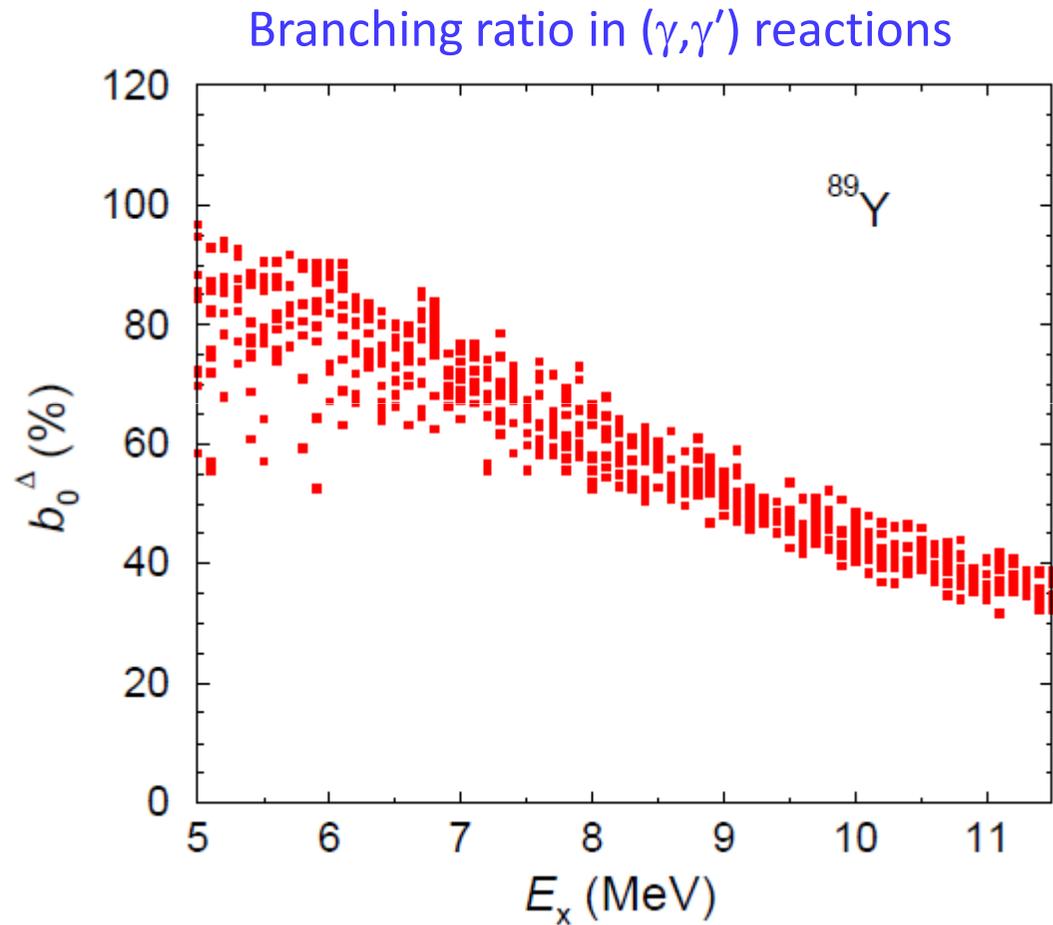
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Branching ratio in  $(\gamma, \gamma')$  reactions



Ronald Schwengner

# Radiative Strength Functions

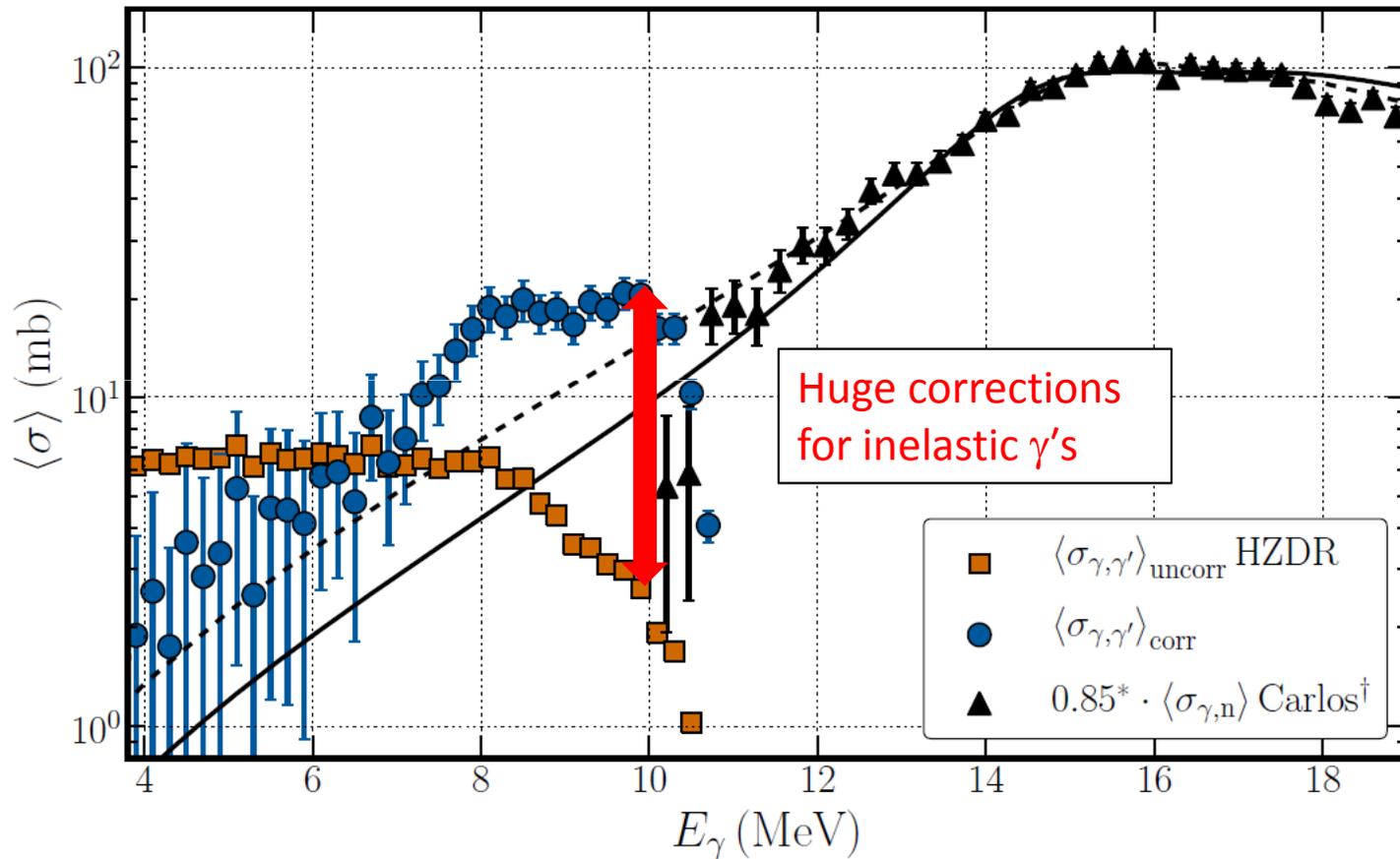


Validity of Brink hypothesis is of crucial importance

Ronald Schwengner

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## Average Photon Cross Sections $^{78}\text{Se}$



Ralph Massarczyk

## Radiative Strength Functions

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### *Challenges for theory:*

The need for predictions of photon strength functions at **low**  $\gamma$ -ray energies,  $E_\gamma < 3$  MeV

... and the predictions of PSFs characterizing transitions to **excited** levels

## Radiative Strength Functions

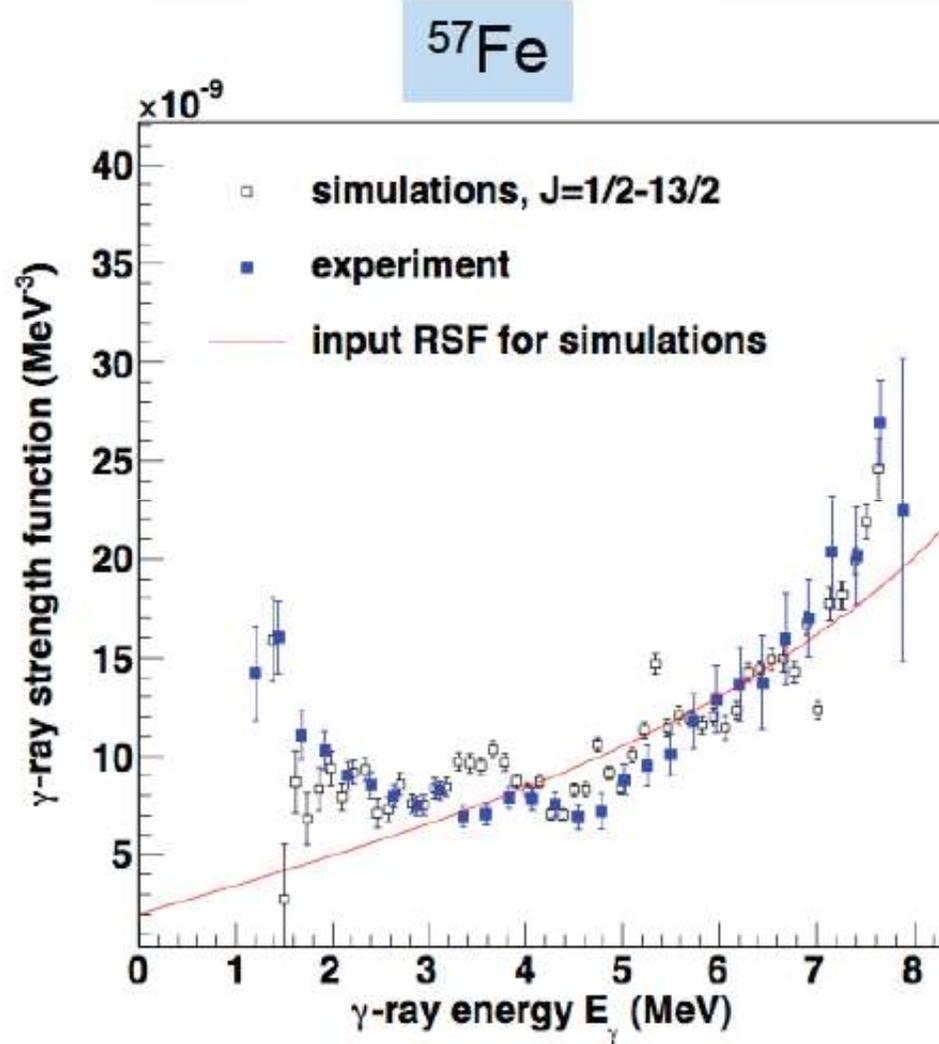
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### *Upbending in medium-weight nuclei*

Understanding its origin

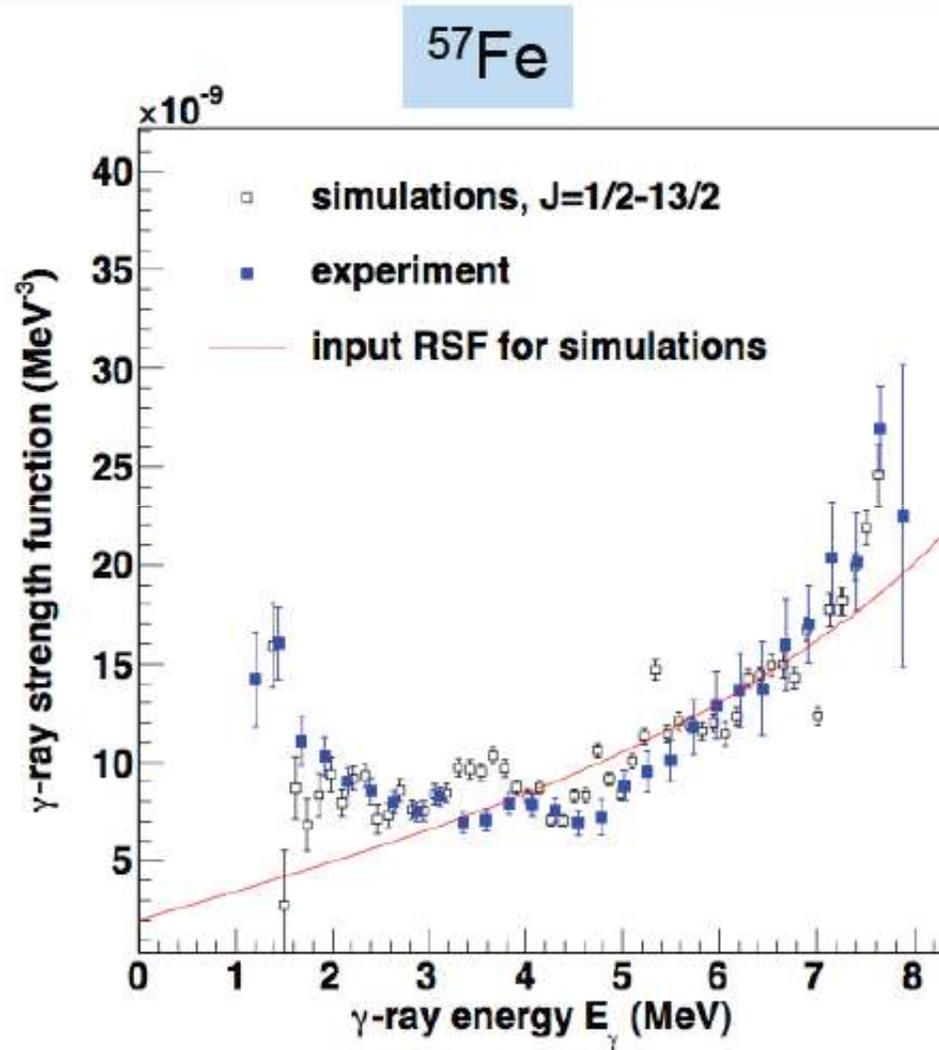
Physics behind it

# Radiative Strength Functions



Ann Cecilie Larsen

# Radiative Strength Functions



The blind benchmark test still not conclusive

### *The pygmy E1 resonances*

Is there a consensus in the definition of PDR?

Do PDRs obey the Brink hypothesis?

Is not there a missing PDR strength due to 'invisible' (weak)  $\gamma$  lines of the quasicontinuum in the Darmstadt/Köln experiments? *Deniz Savran has already, at least in part, answered this question*

## Radiative Strength Functions

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*Any other comment?*

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*Thank you*