Covariances in fast neutron region: BNL-LANL method

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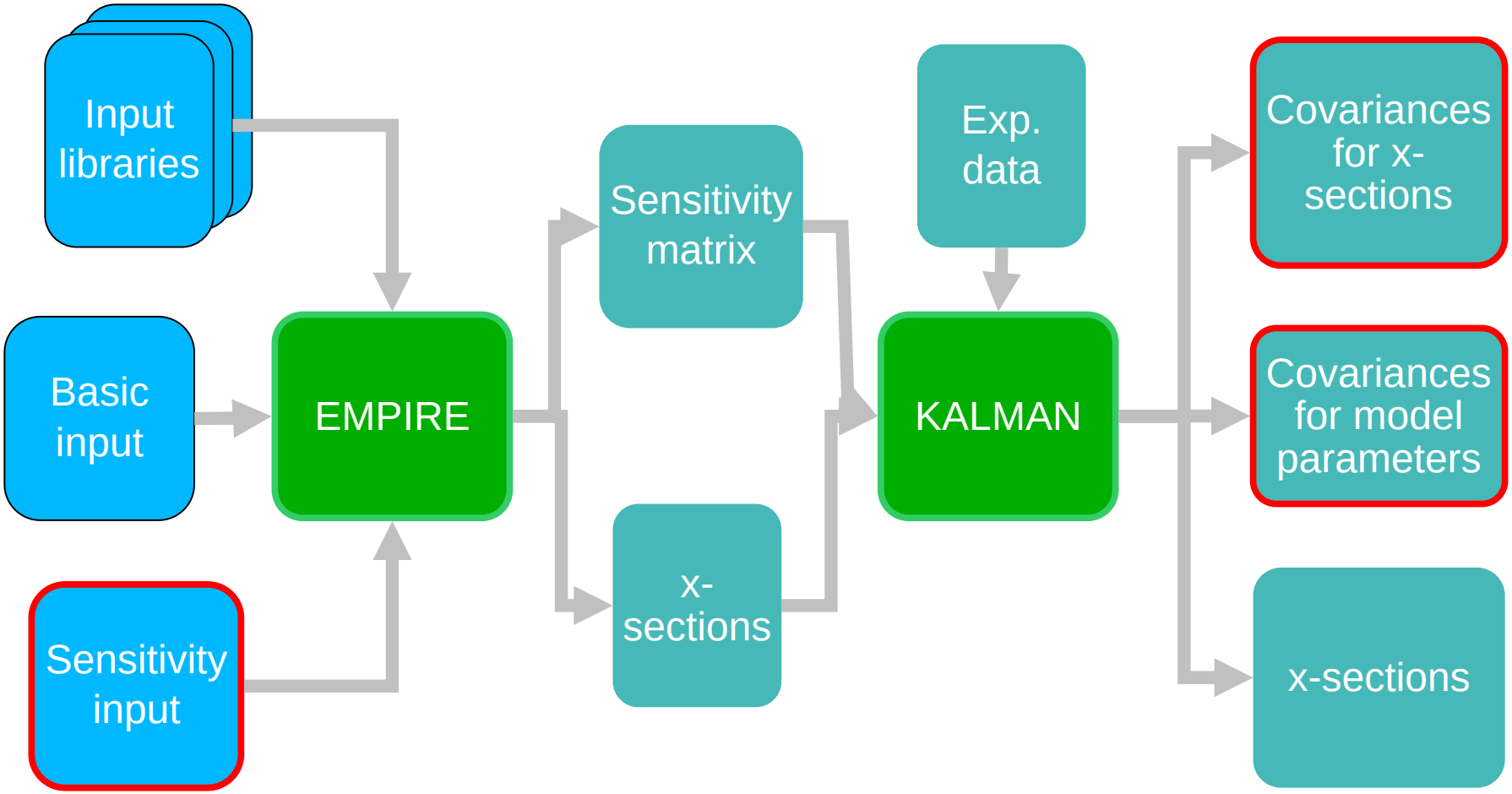
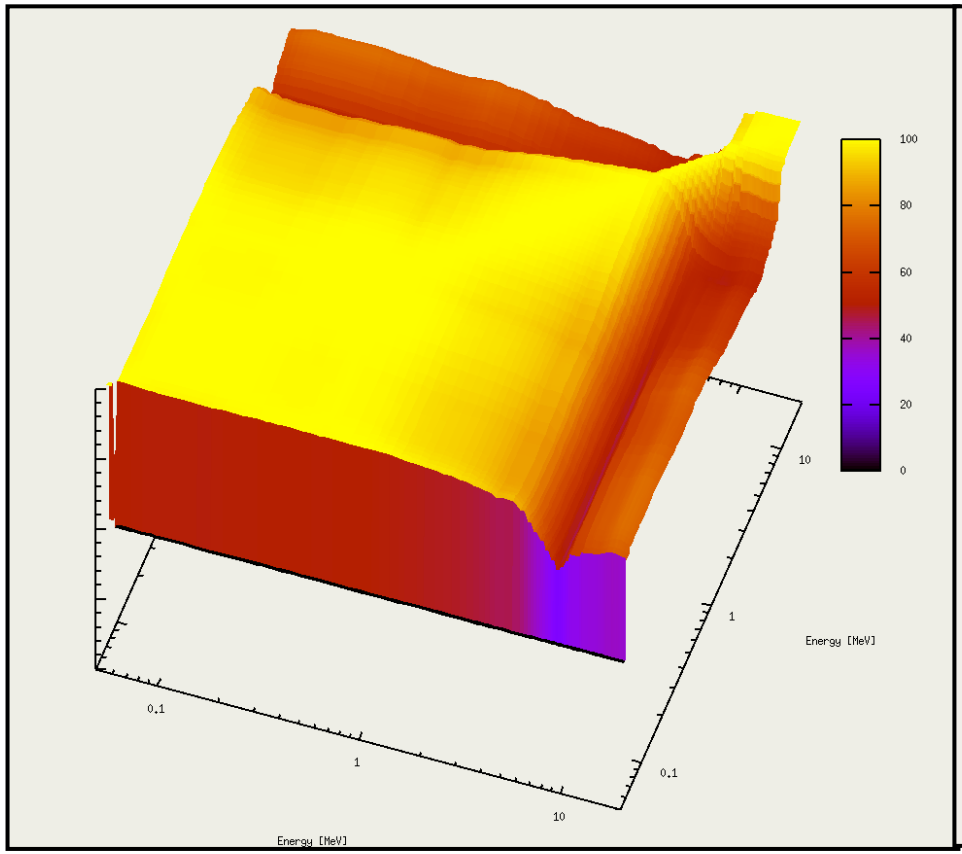
EMPIRE+KALMAN

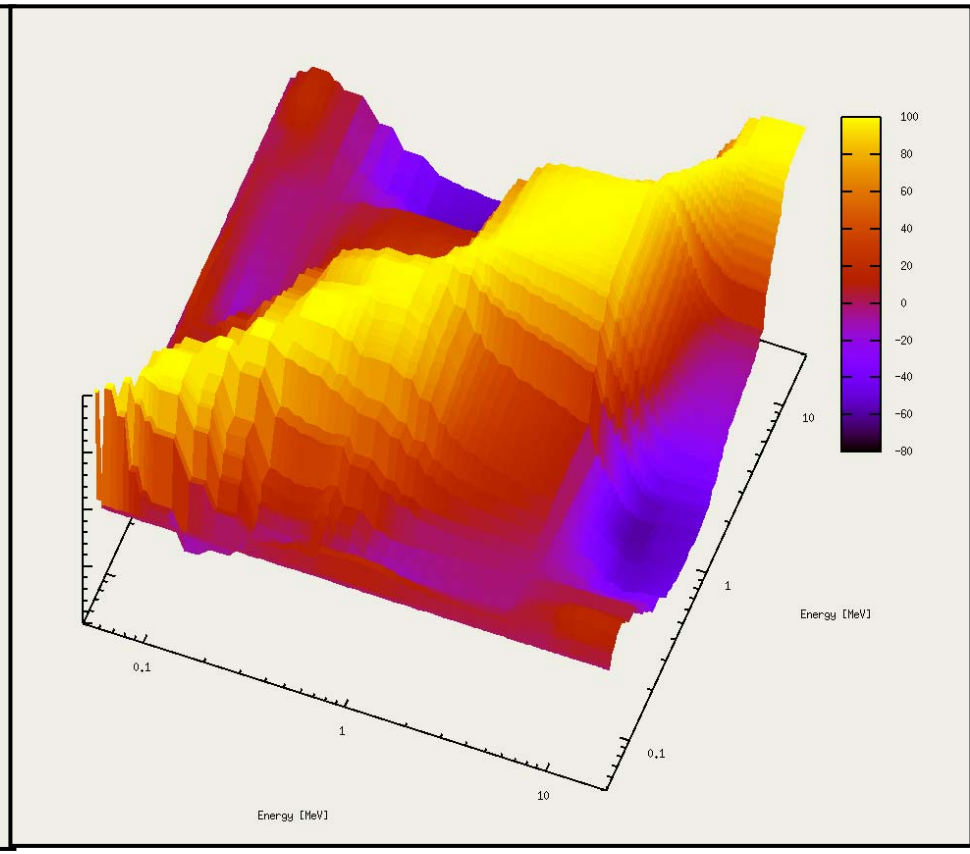


Experimental constrain ^{157}Gd(n,γ)

No experimental data

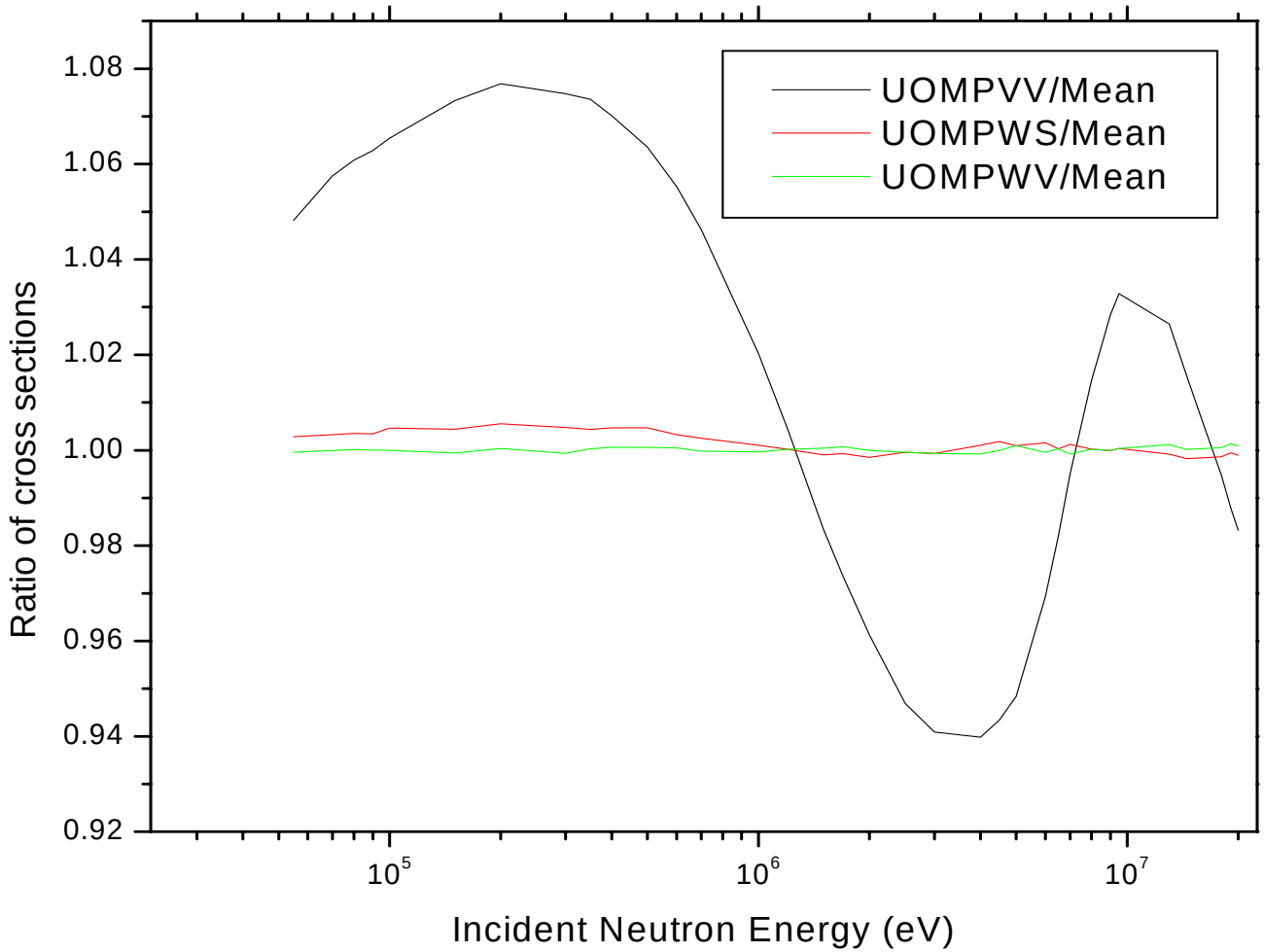


With experimental data



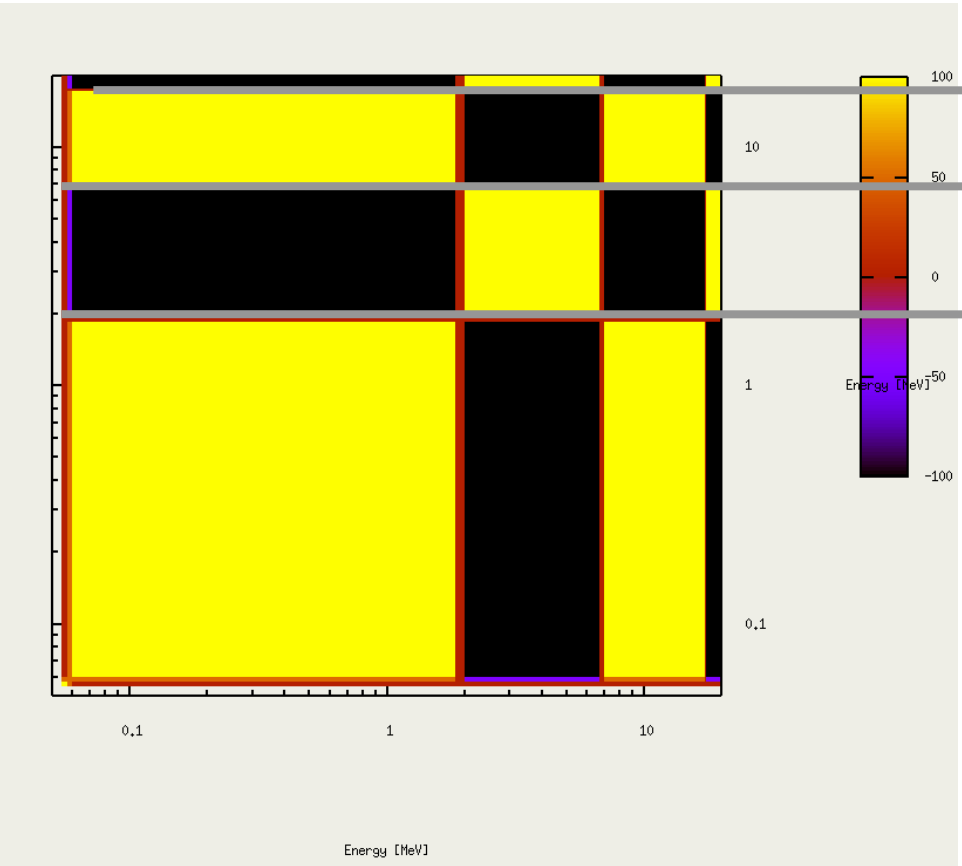
Total cross section: 3 parameters

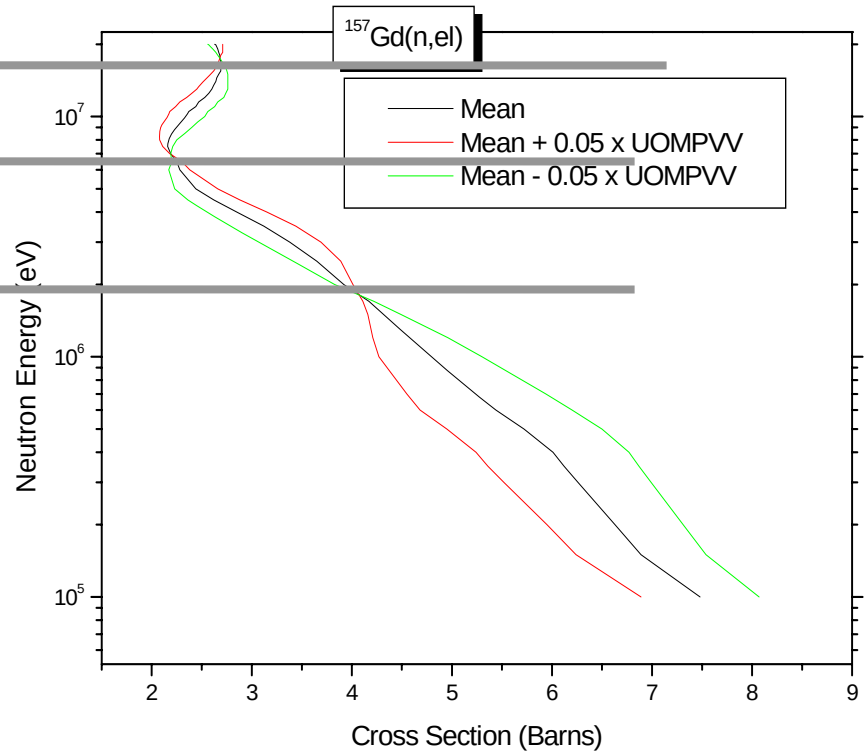
3 Optical Model parameters: real depth V_v is the most important



Elastic cross section: OMP V_v

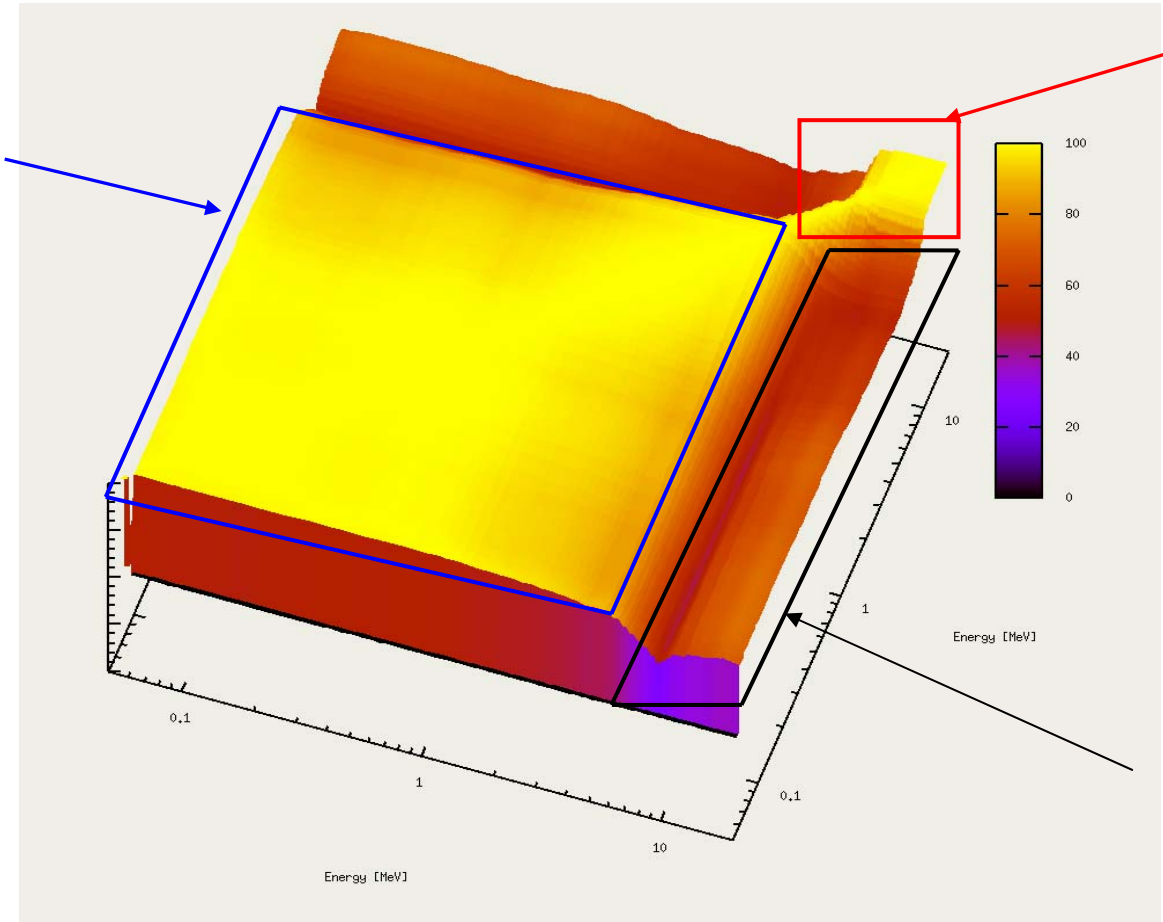
Only real depth OMP V_v varied
No experimental data



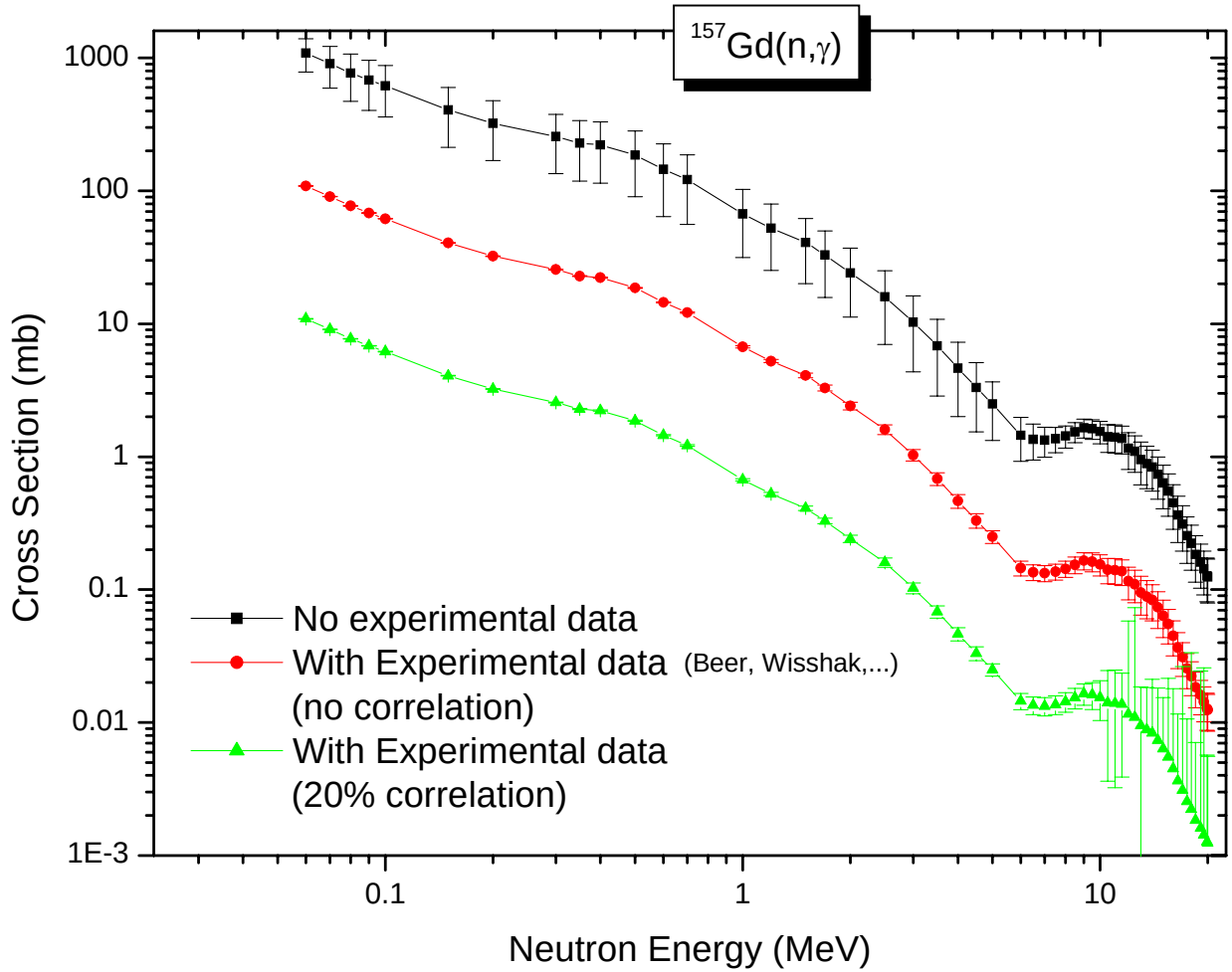


Capture cross section (all)

γ-strength
+
level density



^{157}Gd(n,γ) uncertainties



Conclusions

- Basic covariance generation capabilities in EMPIRE+KALMAN including ENDF-6 formatting (MF=33) developed
- We believe to understand physics responsible for details of covariance structure
- Uncertainties need to be studied in cases when many experimental points are available
- Model parameter uncertainties have to be determined for massive use of models to predict covariance data
- Covariance data should be produced for the whole neutron sub-library of ENDF/B-VII (~400 nuclides)