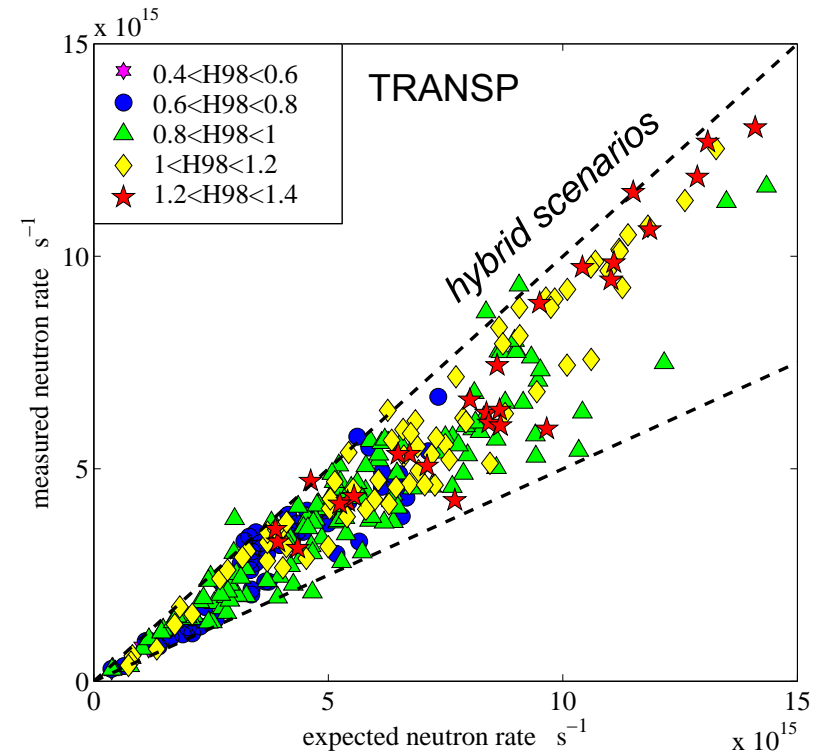




*H. Weisen et al, JET-Eurofusion, paper 179*

- Measured neutron rates in NBI-only discharges (mostly from beam-thermal reactions) in JET-C and JET-ILW are ~50-100% of predictions by orbit codes TRANSP/NUBEAM and ASCOT
- This ‘neutron deficit’ scales with plasma parameters and is smallest or absent for high  $T_e, T_i$ , beta, such as in hybrid scenarios
- A large number of potential candidates was examined, including:
  - unaccounted for dilution by impurities
  - lower than expected NBI power
  - systematic errors in beam deposition
  - fast ion transport similar to thermal
  - fast ion transport by MHD modes



## CONCLUSIONS

- **The candidate causes examined can contribute at most a few % to the ‘deficit’ or are inconsistent with the observed parameter dependencies**
- **‘Neutron deficit’ unexplained so far**