Discussion: what we need

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Equation of state - *what we really need*

- Curated tables with up to date, "best" physics available with wide range of densities *(should we treat low densities separately?)*, temperatures, electron fractions
- Consistent zero temperature neutrino-less beta equilibrium
- Consistent electron / photon EOS for out of NSE treatment
- Making an informed choice:
    - Overview of various nuclear physics and astrophysical EOS constraints
    - Brief descriptions of the nuclear model and assumptions behind the different EOS
- Extended CompOSE manual

Equation of state - *what we would like to have*

- Large variability of finite-temperature equations of state covering the "*entire*" parameter space in terms of tidal deformabilities ($\Lambda_{1.4}$) and maximum masses.
- EOS frameworks: Gain more control over the parameters of the EOS
  - nuclear couplings
  - matter degrees of freedom
  - description of the thermal part
- Do we always want tables or should we think of something else, i.e. free energy parameterizations?
- How about having a common EOS framework for simulation codes (what about future challenges (GPUs)?)

Neutrino opacities

- Neutrino opacities consistent with the EOS and including hyperons / deconfined quark degrees of freedom as appropriate
- Not all EOS on CompOSE provide all the necessary quantities to compute those. Should we have a minimal list of mandated quantities? *(other than pressure, energy density etc.)*
- Double differential cross sections and emission rates. Code or tables?
- Curated collection of reactions and explicit list of approximations made *(Should there be an indication if any is inconsistent with a given EOS?)*