What have we learned from the SACA* approach within QMD type transport models (BQMD, IQMD, pHSD) ?

- The pre-fragments of the final state clusters **exist at early times**, because fragments are not a random collection of nucleons at the end but initial-final state correlations (comparison with exp. hypernucleus yields confirms it). The MST* (coalescence) approach alone cannot realise this early formation. For this, the binding energy maximisation approach is needed.
- In transport models, the matter should be **initially bound** (stable). Suggestion: take care of **pre-formed α's**.
- Primary fragments can be **excited** => **secondary decay** has to be applied (GEMINI).
- When are the **odd-even effects** mostly realised: in primary or secondary stage?
- ↔ Need to define from which conditions of temperature and density the **nuclear structure effects** vanish.
- $\mathbf{E_{asy}}$ seems to be participating in the cluster binding energy even at very high bombarding energy, as seen from the hypernucleus production (comparison with HyPHI exp. data). In particular sensitive for small isotopes.
- In the clustering process, $\mathbf{E_{asy}}$ **is probed at only sub-saturation densities**: high densities correspond to nucleons having high relative momenta => no good candidates for making a cluster. It implies that the **isotope yields** cannot reflect the high density behavior of E_{asy} within this approach.
- The clustering has a (moderate) influence on the flow of protons and neutrons.

*: *Simulated Annealing Clusterisation Algorithm*: MST coalescence (*Minimum Spanning Tree*) + partition binding energy maximisation: $B_{cluster} = E_{mean\ field} + E_{surf.\ correct.\ (Yuk)} + E_{asy}\ (+ E_{struct.(pairing)})$