

## Study questions and answers

In which order must the phases be listed in transportProperties, when using the new solver?

- The phases must be listed as (liquid – vapour – non-condensing).

Why is  $\dot{m}$  decomposed into  $\dot{m}_v$  and  $\dot{m}_c$ ?

- The mass flow is decomposed so part of the source term through mathematical manipulation can be taken into account implicitly, which makes it contribute to the diagonal part of the matrix, when makes the solution more stable.

How do you check which libraries a solver uses?

- That can be checked in the options file in the Make folder of the solver.

What is the role of  $\alpha_{nuc}$ ?

- $\alpha_{nuc}$  is used as a cavitation starter. It makes sure, that the vapour fraction is never 0 when multiplied with the vaporisation term. That makes the vaporisation term a little larger than the condensation term, so cavitation can start.

Which schemes should be used for temporal and divergence terms for  $\alpha$ , for boundedness to be ensured?

- As shown in the original alphaEqn.H file, the Euler scheme should be used for time and upwind should be used as divergence scheme.

What are the assumptions of the SchnerrSauer model?

- It assumes, that there are a lot of small nucleation sites, where the cavitation can begin, and that these grow and collapse as spherical bubbles.