New experimental setup for the study of bubble coalescence and bubble jet interactions in microgravity conditions is presented [1]. Test section consists of a cavity full of liquid containing two bubble injectors whose separation distance and relative orientation angle can be controlled. Injection of bubbles is based on the generation of a slug flow in a capillary T-junction [2].


Definitions: 
- $\Psi$ - direction of injection.
- $y$ - direction of gravity.
- $x$ - distance and relative orientation angle can be controlled.
- Buoyancy and turbulence zones
  - Two different behaviours can be observed: Turbulence zone (1) where it is impossible to predict the trajectory of individual bubbles, and buoyancy zone (2) where all the bubbles are rising in a linear path. The angle $\phi$ separates these zones.

Variation of $x$ for different values of the momentum injection rate $J$: Left: Different values of $Q_L$, and $\Psi = 0$ (injectors oriented face to face). Right: Different values of $\Psi$ (different angle between injectors), and $Q_L = 30$ ml/min.

Conclusions
1. New design to study bubble jet interactions, dynamics and coalescence.
2. Bubble size, velocities, generation frequency and incidence angle can be controlled.
3. Individual and collective behaviour of bubbles have been studied.
4. Several tests carried out in 1g for a further use in 0g.