The design of an experiment to study the dynamics and coalescence of bubbles in a microgravity environment for different incidence angles is presented. Bubbles with controlled size are introduced in a cavity by means of two injectors. The relative orientation of both injectors is controlled externally by stepper motors, allowing them to lie one in front of the other or to describe angles up to 60° with the horizontal line. Experiment control (motors, liquid and gas pump) and data acquisition (temperature, pressure, acceleration) are monitored by means of a Labview code. A high-speed camera records the bubble dynamics and coalescence phenomena. Preliminary results in 1g are presented.

**Introduction**

Method used to generate bubbles and to inject them with different angles and velocities:

![Diagram of bubbles generation](Image)

A methacrylate cavity full of liquid, in which the bubbles are injected, is surrounded by the corresponding control and data acquisition devices.

![Experimental setup](Image)

**Experimental Setup**

A methacrylate cavity full of liquid, in which the bubbles are injected, is surrounded by the corresponding control and data acquisition devices.

**Preliminary Results in 1g**

- **Coalescence Phenomena**
  - A sequence of snapshots showing a phenomenon of coalescence is shown in the next figure. After coalescence in picture IV, pictures V-IX show the bouncing of the daughter bubble.

![Sequence of snapshots](Image)

**Conclusions**

- New design to study bubble dynamics and coalescence.
- Bubble size, frequency and incidence angle can be controlled.
- Several tests carried out in 1g for a further use in 0g.
- Region of very low density of bubbles observed near the impact zone.
- Different jet geometries observed by varying φ at Q_L = 0.

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