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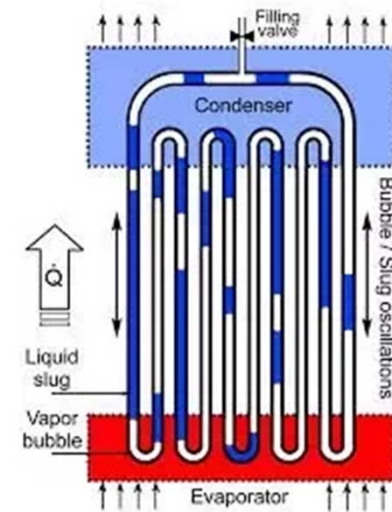
**Experimental characterization of cryogenic Nitrogen
Pulsating Heat Pipes**



A pulsating heat pipe (PHP) utilizes the oscillation of vapor plugs and liquid slugs within the pipe to transfer heat from the evaporator to the condenser.

The vapor plugs growing in the evaporator section and liquid slugs growing in the condenser section cause the volumetric expansion and contraction.

The oscillatory motion of the working-fluid will be driven by this pressure net effect with other factors, such as capillary force, gravitational force and bending effect etc.

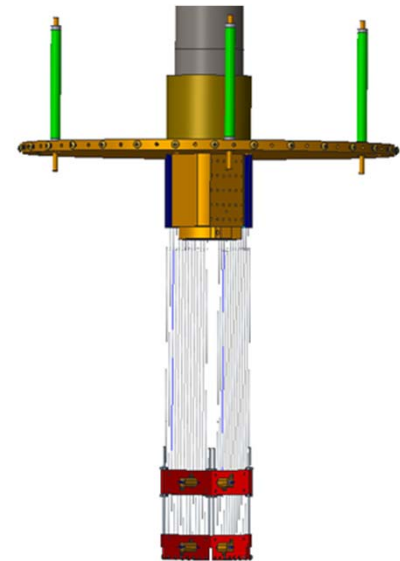


Schematic of a closed loop PHP device.

Previously, a PHP device has been built by Dr. Fonseca in order to measure and collect heat transfer data for Helium as the working fluid.

The main goal of this experiment is to modify the existing PHP device and to operate with Nitrogen as the working fluid. And a CH-110 (200[W] cooling capacity at around 77[K]) cryocooler replaces the RDK-408A2 cryocooler for the experiment.

Data will be collected and compare with Dr. Fonseca's Helium experimental data.



CAD model of the Nitrogen PHP device