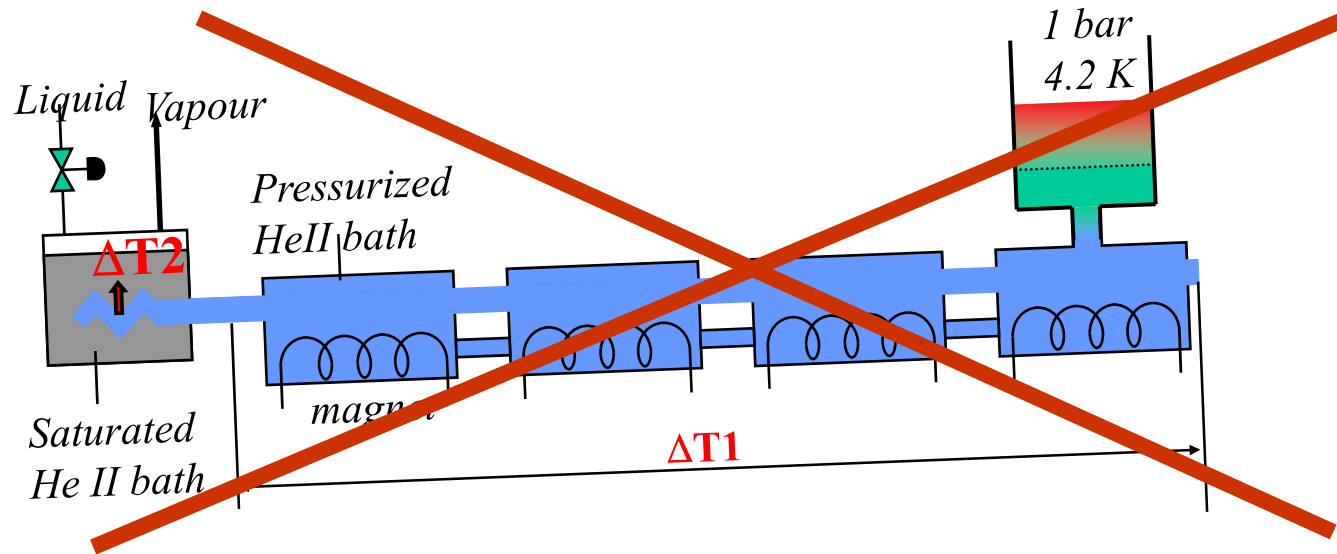
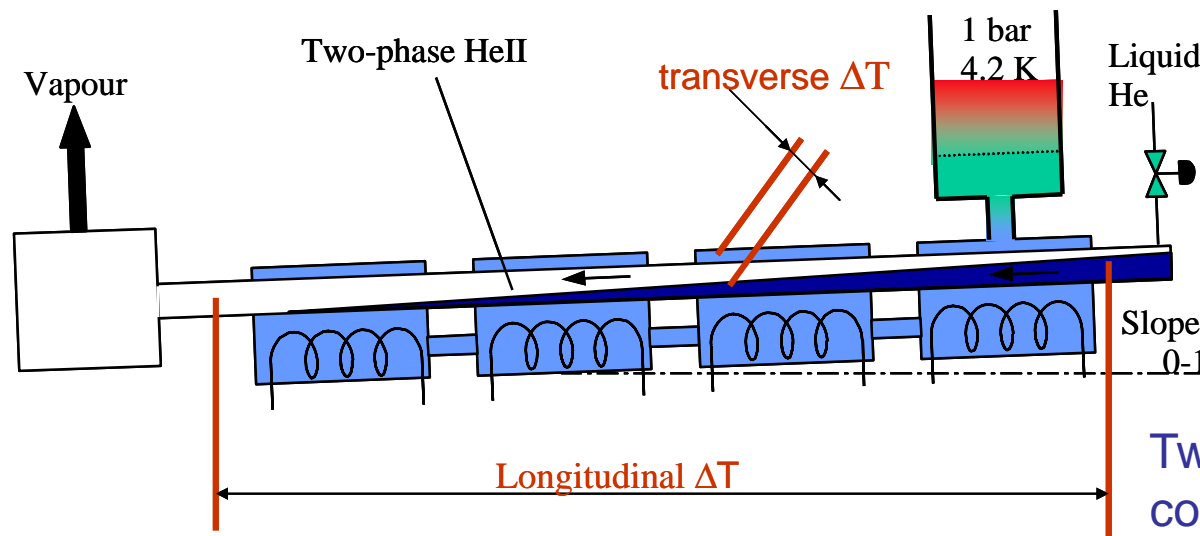


# LHC cooling scheme



A Tore Supra like cooling scheme ?



Any instabilities ?

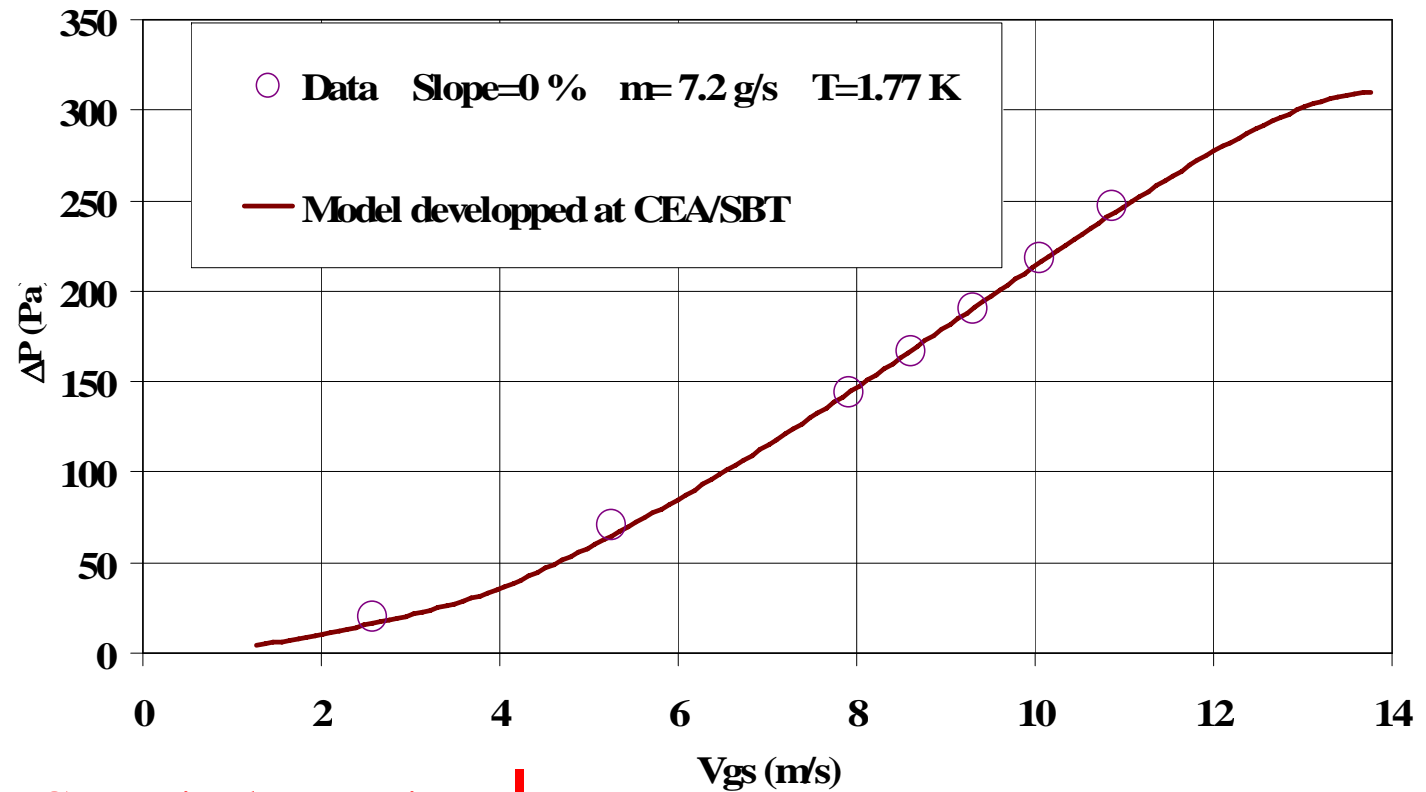
Enhance transverse heat transfer by use of corrugated pipe ?

Two-phase flow pressure drop compatible with longitudinal DT ?



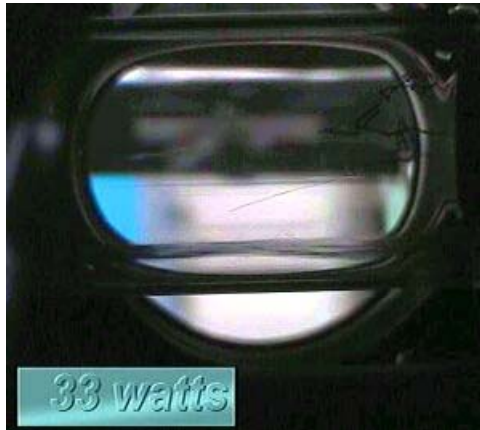
# Main results concerning pressure drop

Comparison between experiments and theoretical model

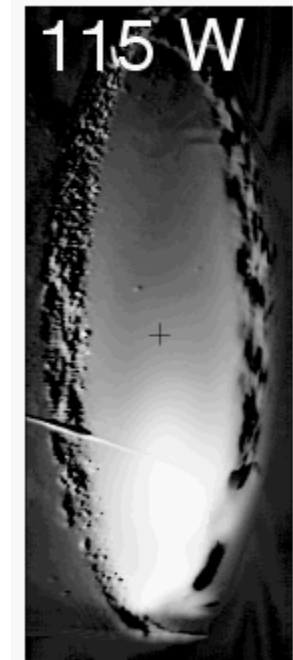


LHC nominal operation

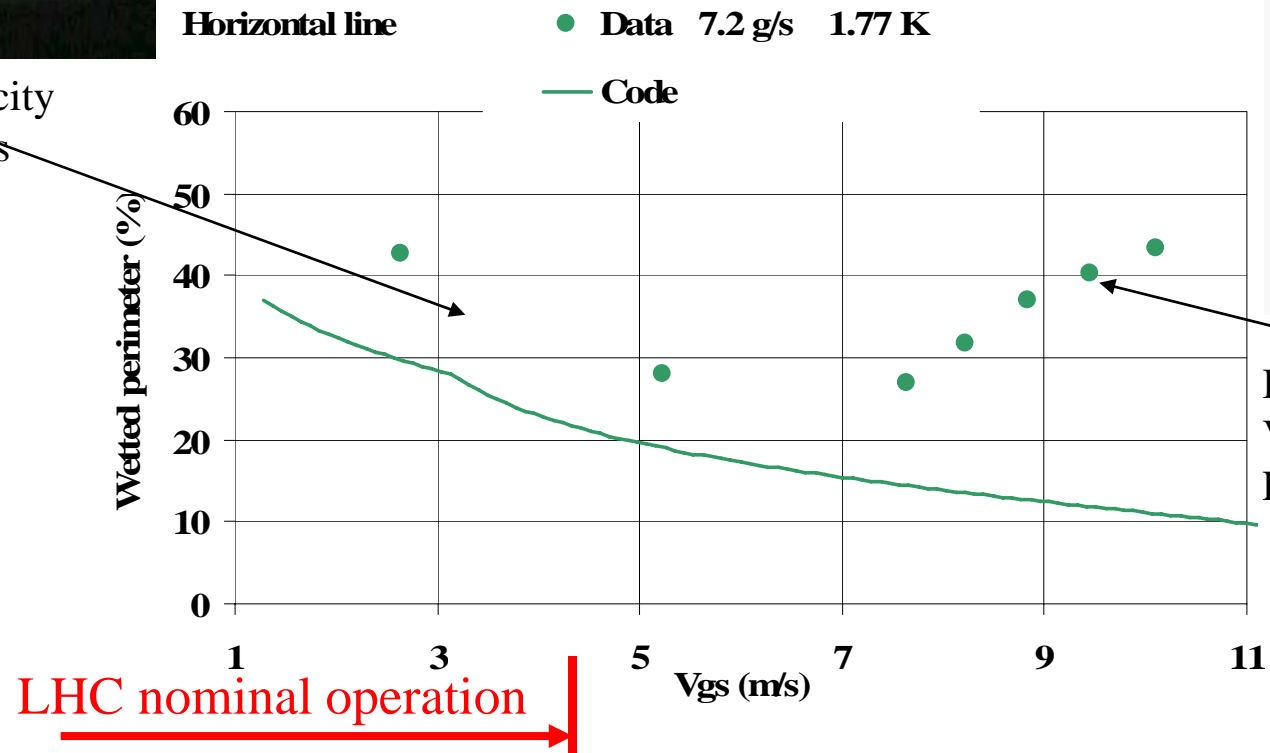




Low vapour velocity  
No liquid droplets



High vapour  
Velocity  
Lots of droplets



- From this results on co-current HeII two-phase flow (no instability for descending co-current two-phase flow, longitudinal and transverse DT small enough to correctly cool down the magnets) we concluded that this cooling scheme will be used to cool down the LHC superconducting magnet strings.
- For upgrade of LHC, the use of smaller sector with high vapour velocity will also meets the requirement.