

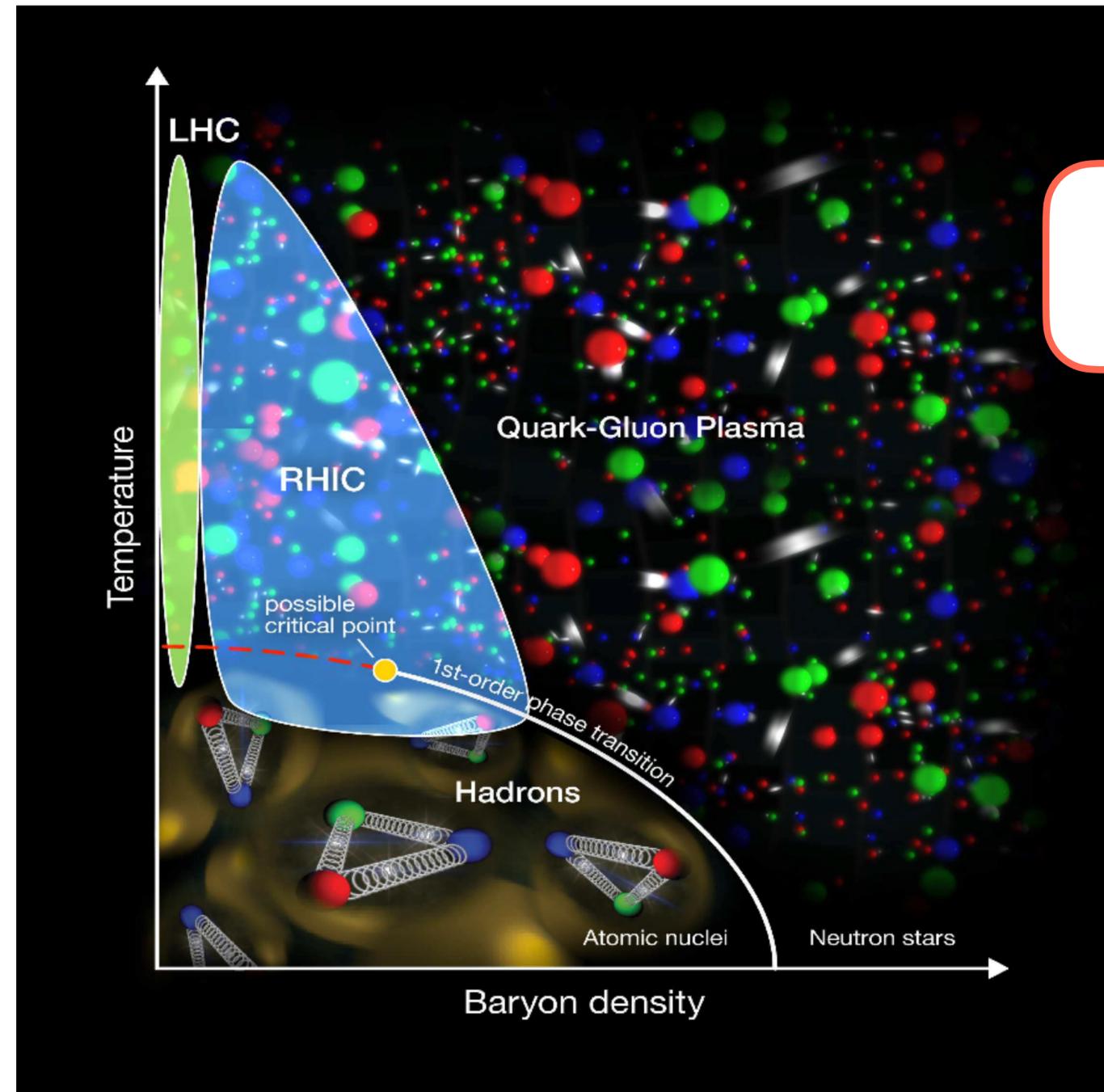
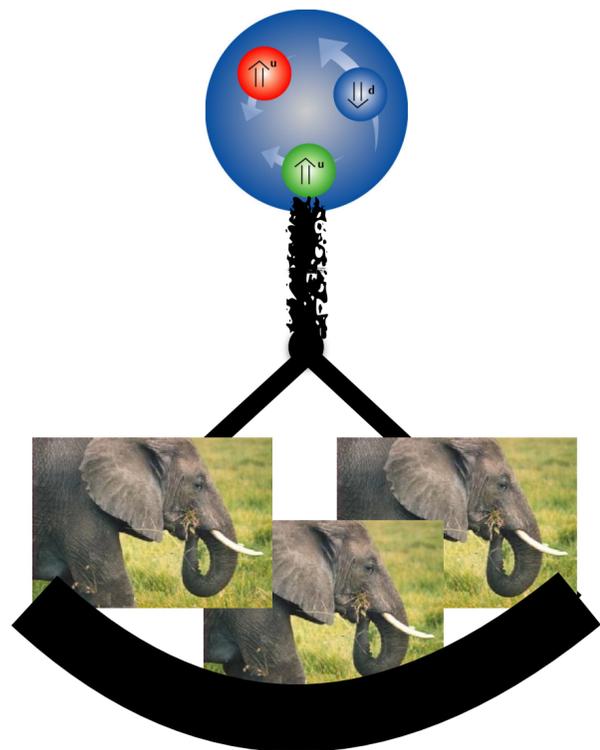
# ***FASTSUM Collaboration***

INFN, Florence  
University of Liverpool  
National University of Ireland, Maynooth  
Sejong University, Korea  
University of Southern Denmark  
Swansea University  
Trinity College, Dublin

Chris Allton

*Swansea University*

# Phase diagram of quarks



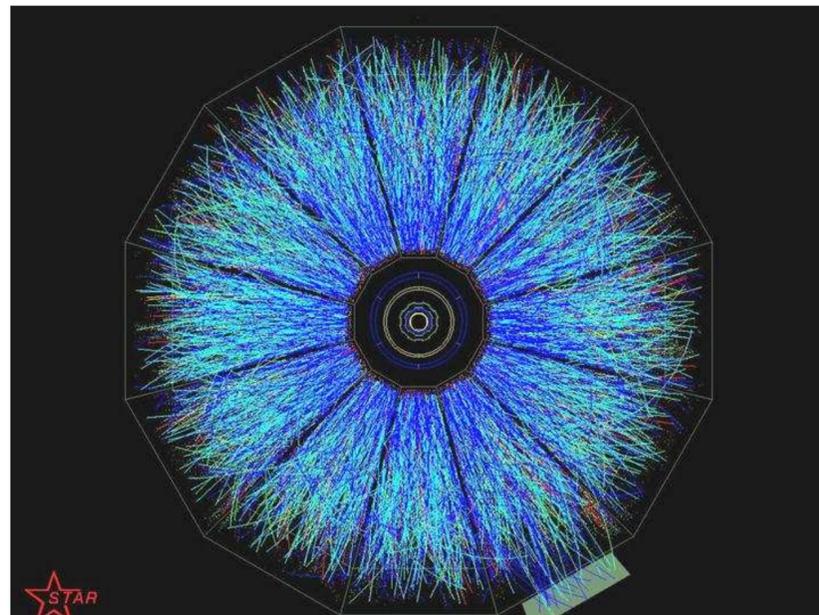
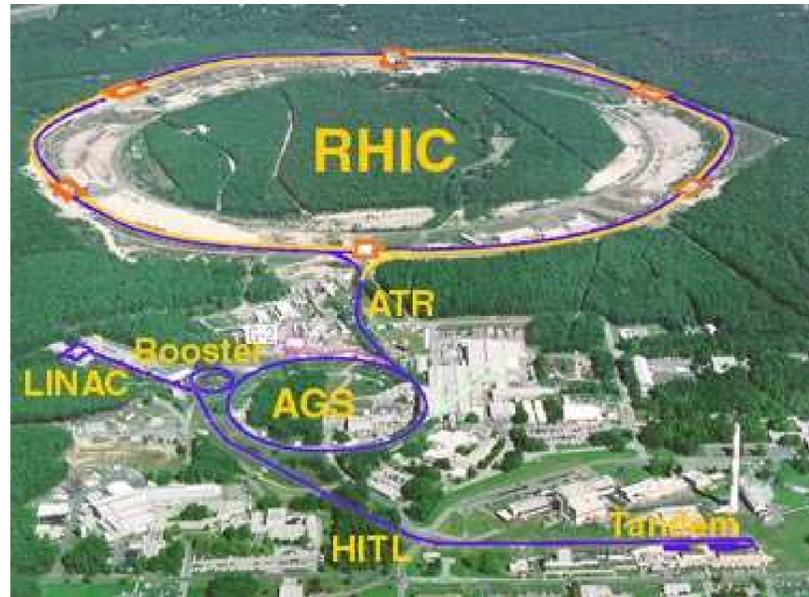
quarks                      gluons

$$\bar{\psi}(x)(\mathbb{D} + m)\psi(x) + \frac{1}{4}F_{\mu\nu}F_{\mu\nu}$$

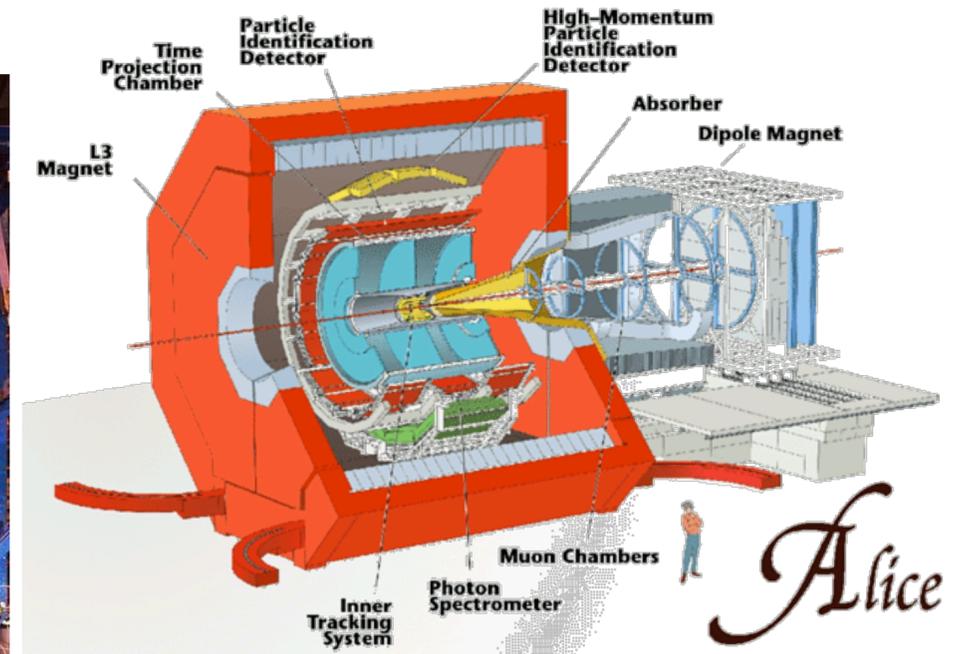
# Experiments at $T \neq 0$

Heavy-Ion Collisions

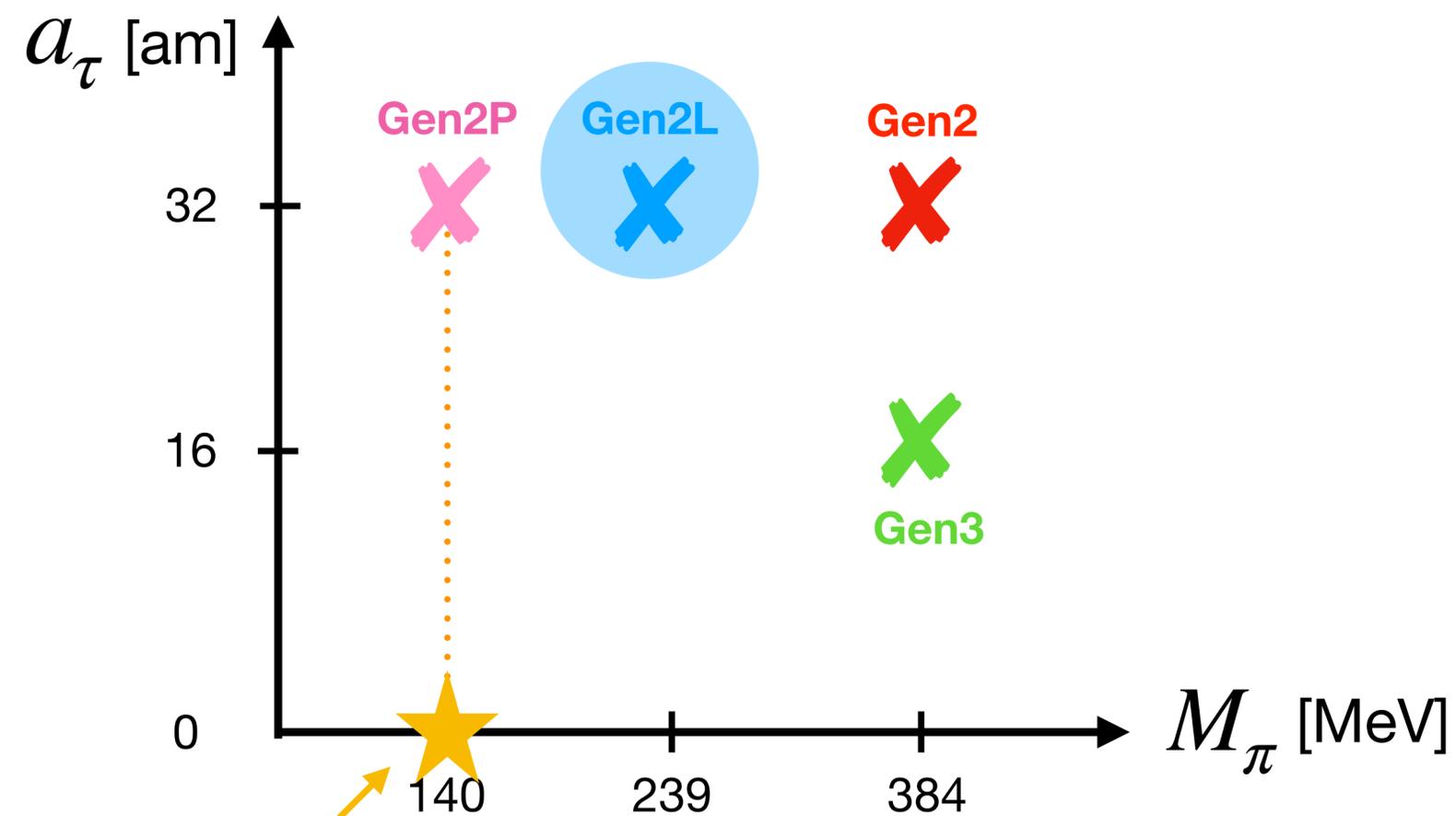
RHIC @ BNL



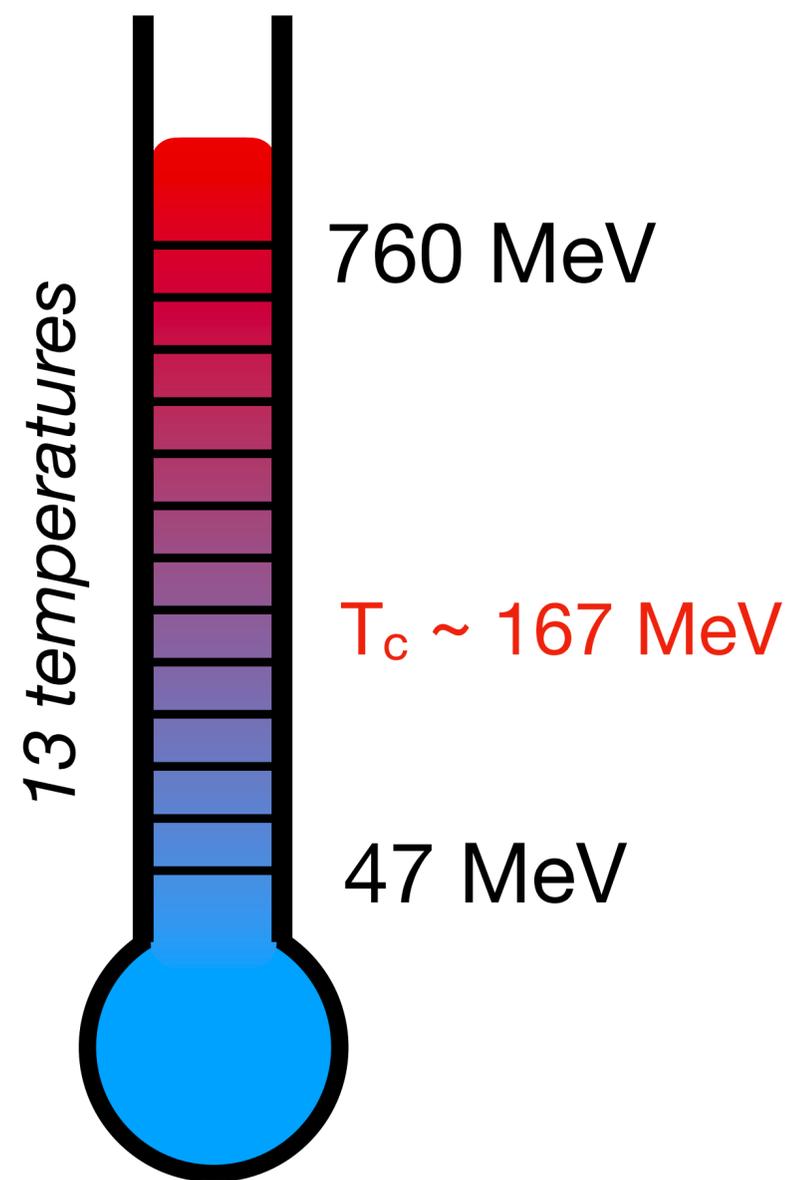
ALICE @ LHC



# FASTSUM Approach: Lattice Parameters



Nature



Generation 2L  
(2+1) flavour  
 $a_s \sim 0.112$  fm

**Gauge Action:**  
Anisotropic,  
Symanzik-improved

**Fermion Action:**  
Wilson-clover,  
tree-level tadpole,  
stout-smearred links

# Action

- Anisotropic
- Stout Smearing

# Code Summary

- Chroma
  - GPU
- OpenQCD
  - CPU, potentially moving to GPU