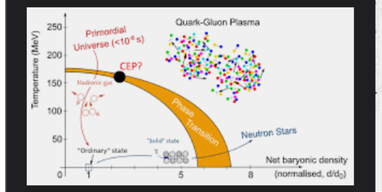
THE QCD PHASE DIAGRAM

QCD PHASE DIAGRAM

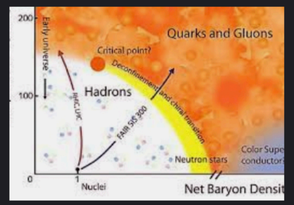
Google qcd phase diagram

All Images Maps Videos News More Tools Collections SafeSearch

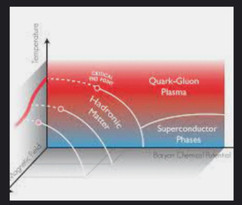
lattice | fair | quark gluon | energy | gsi | equation | plasma | star | nica | baryon chemical potential | rhic | baryon | quark matter | phase transi



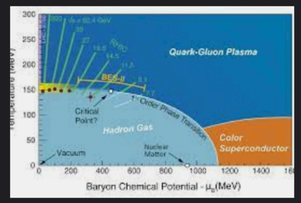
The QCD phase diagram and the critical ...
compstar.uni-frankfurt.de



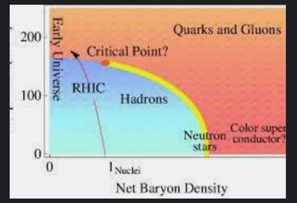
A sketch of the QCD Phase Diagram ...
researchgate.net



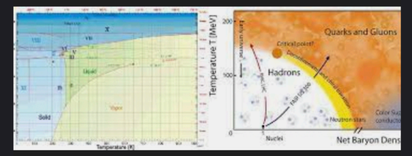
The QCD phase diagram and the cr...
compstar.uni-frankfurt.de



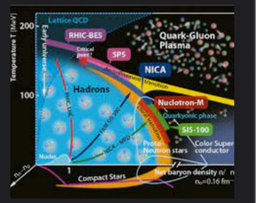
Quark-matter fireballs hashed out in ...
cerncourier.com



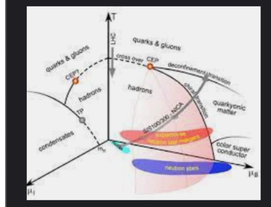
The QCD phase diagram. Many corners of ...
researchgate.net



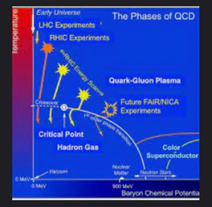
Exploring the QCD Phase Diagram Using ...
gauss-center.de



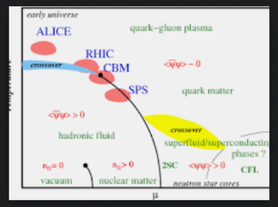
Compact stars in the QCD phase d...
indico.jinr.ru



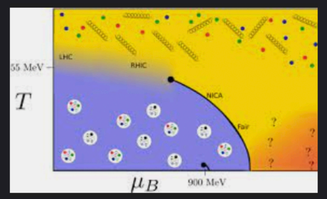
Physics program | Compressed Bary...
cbm.gsi.de



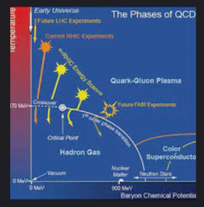
Probing the QCD phase stru...
cds.cern.ch



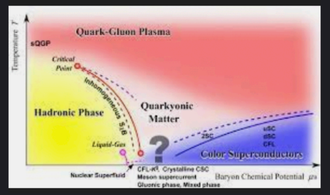
2: Schematic view of QCD phase diagra...
researchgate.net



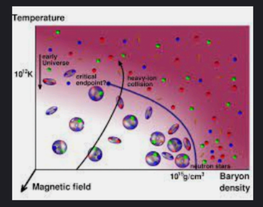
Overview of the QCD phase diagram ...
link.springer.com



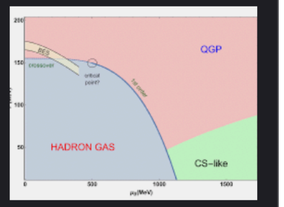
baryon chemical potential ...
physics.stackexchange.com



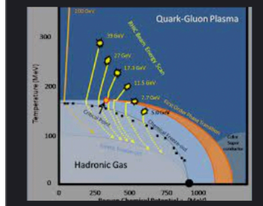
phase diagram of dense QCD – arXiv Vanity
arxiv-vanity.com



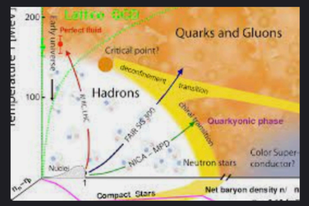
QCD phase diagram: overview of rece...
iopscience.iop.org



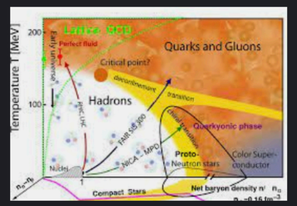
QCD Transition ...
mdpi.com



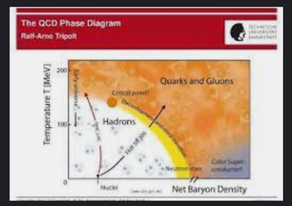
LGT group @ BNL
quark.phy.bnl.gov



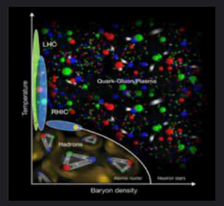
phase structure and dynamics of QCD
mpi-hd.mpg.de



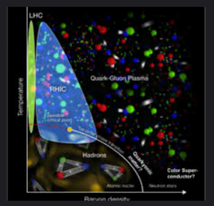
quark) matter with chiral ...
crunch.ikp.physik.tu-darmstadt.de



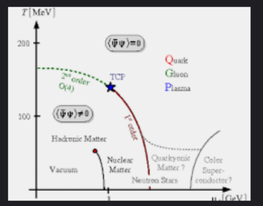
The QCD Phase Diagram - Theory Center
yumpu.com



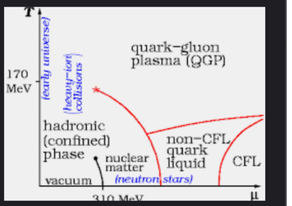
nuclei and the QCD phase diagr...
gdrqcd.in2p3.fr



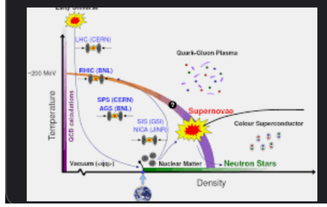
Nuclear Matter Phase Structur...
english.imp.cas.cn



QCD phase diagram from the lattice a...
cds.cern.ch



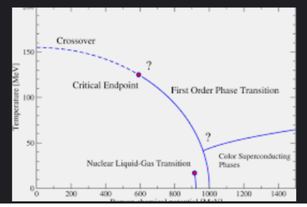
Datei:QCD phase diagram.png – Wikipedia
de.m.wikipedia.org

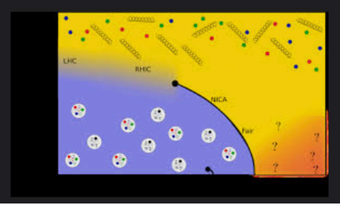


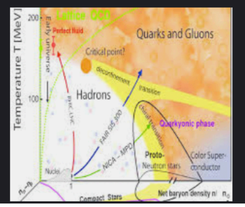
Related searches

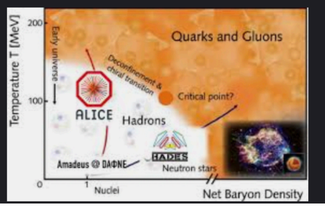
quark gluon qcd phase diagram

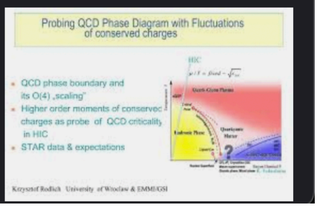
quality cost delivery



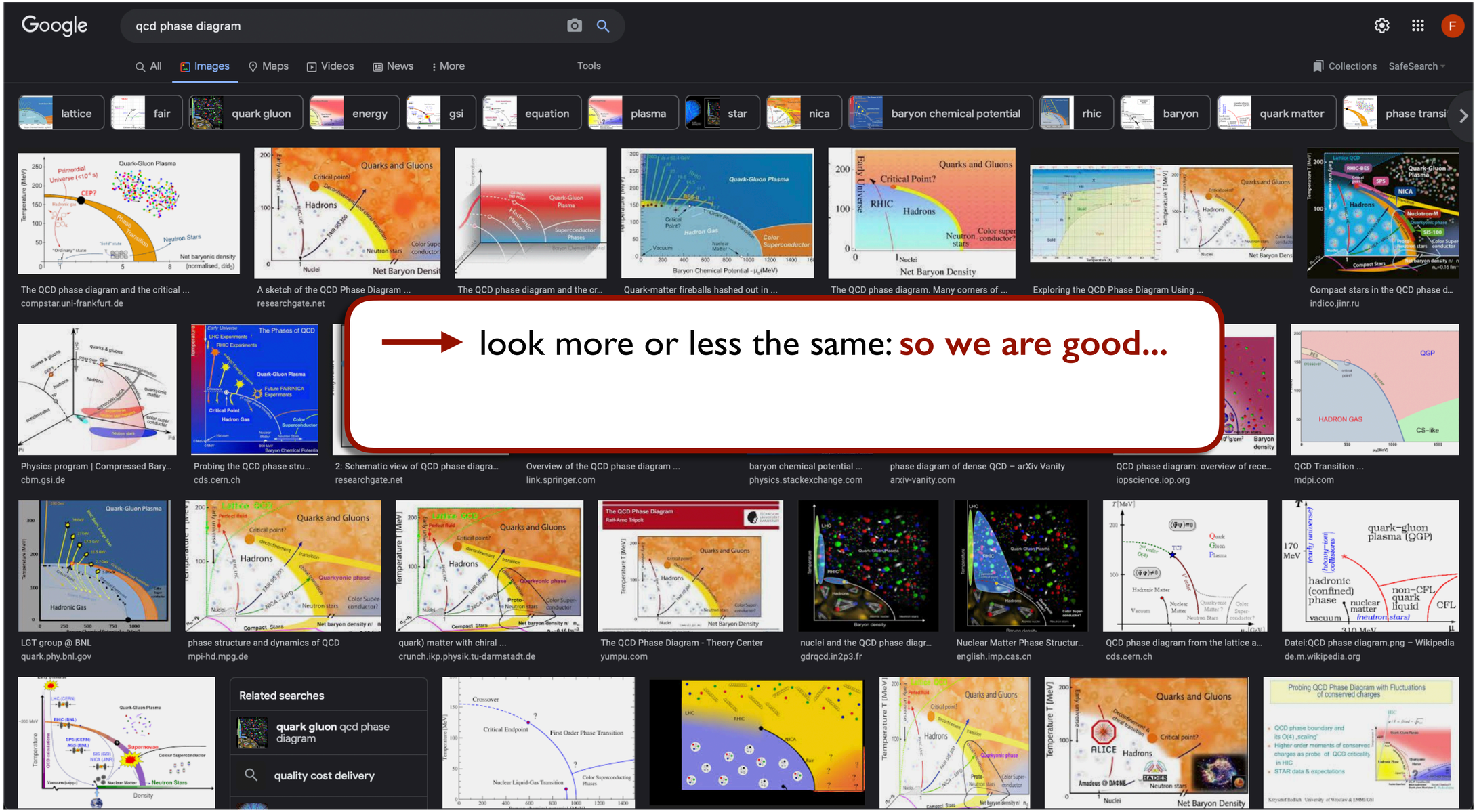




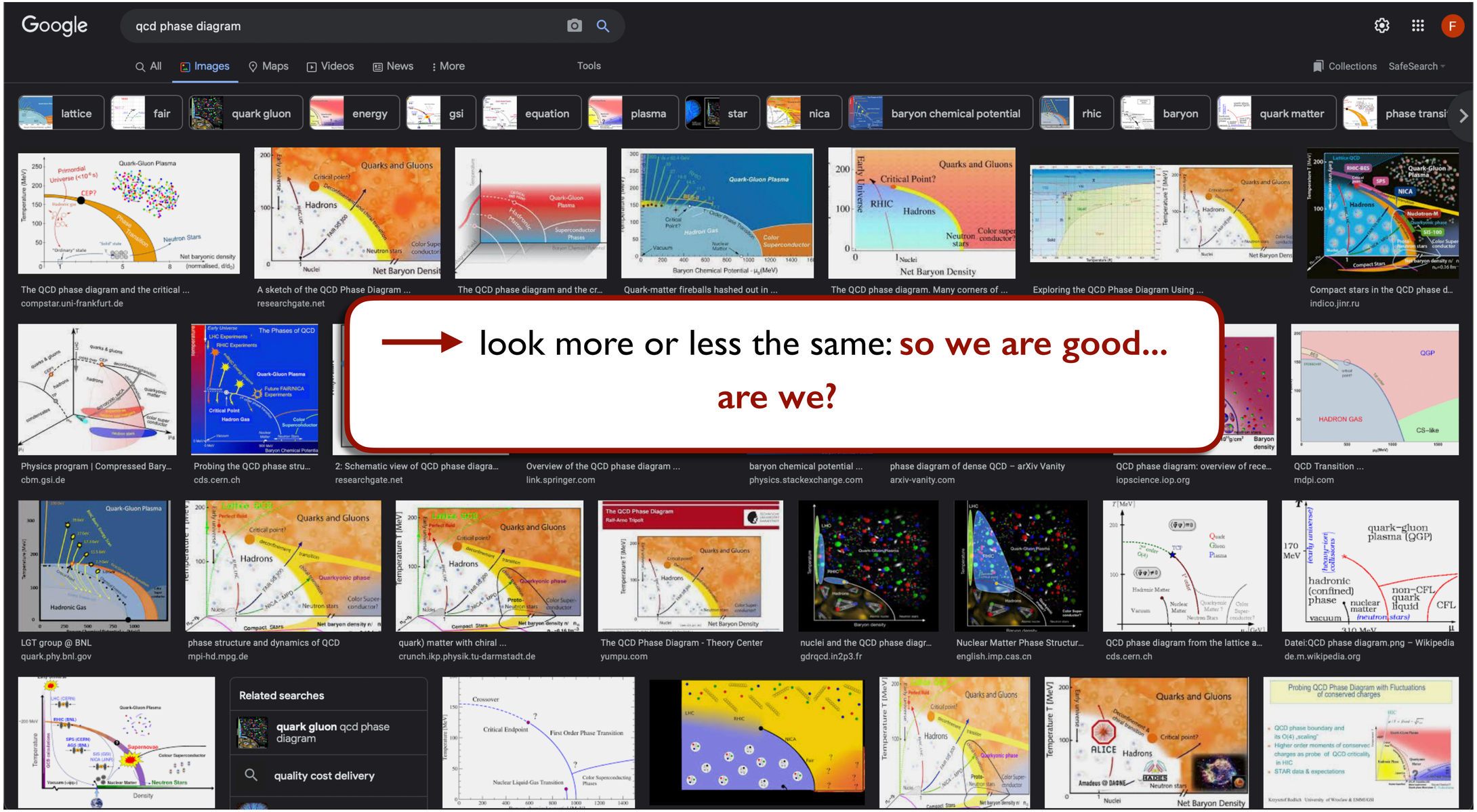




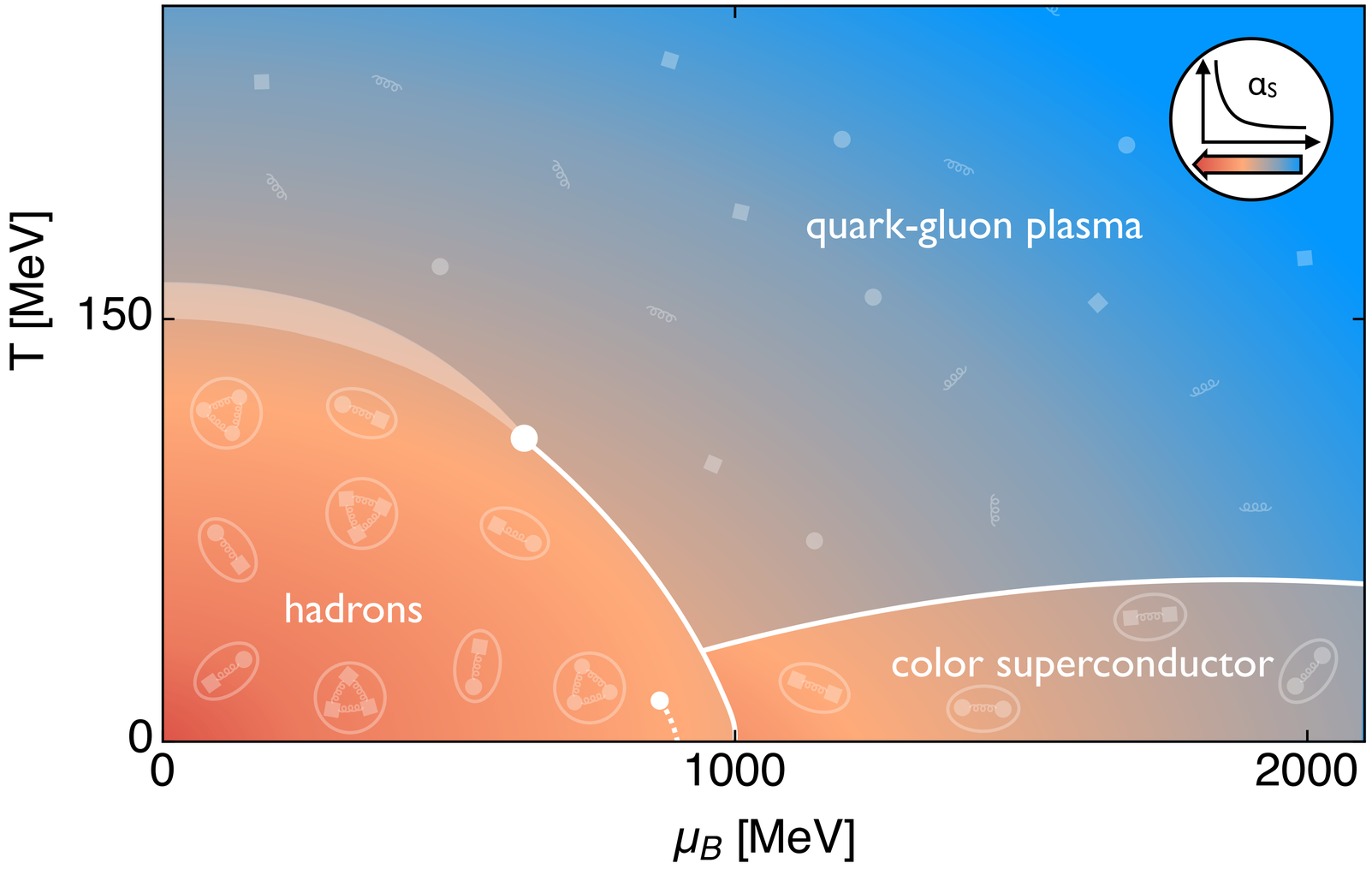
QCD PHASE DIAGRAM



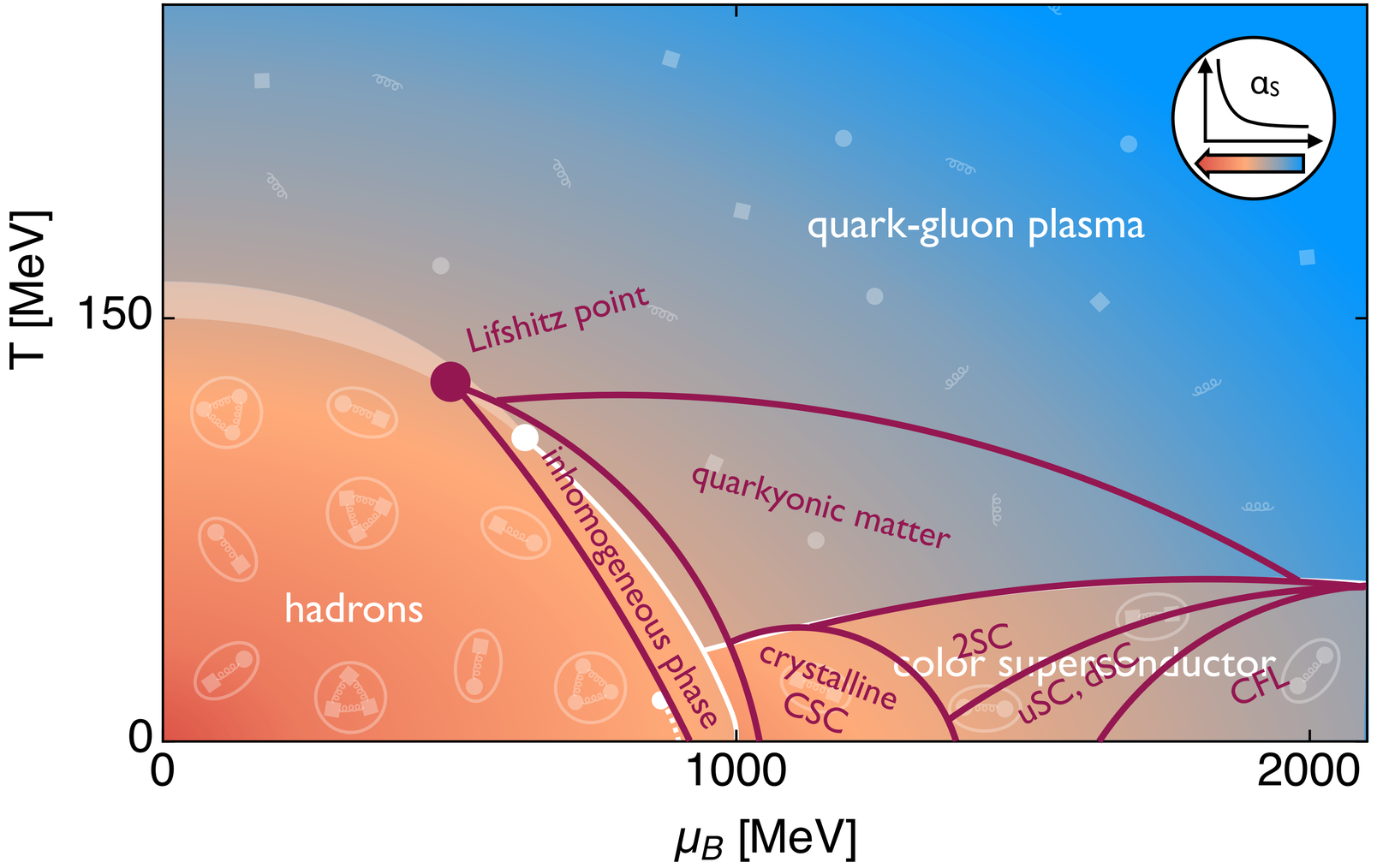
QCD PHASE DIAGRAM



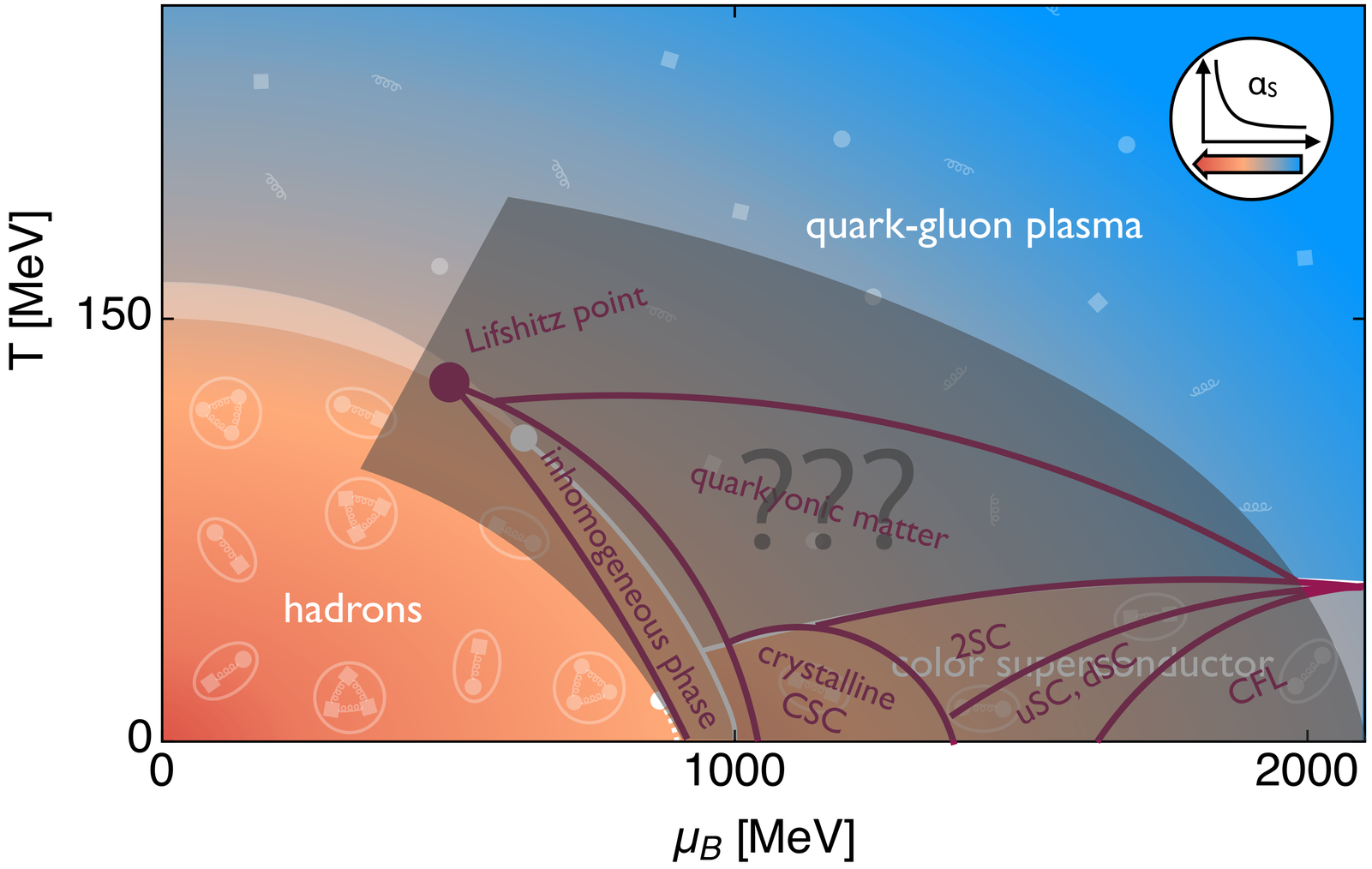
QCD PHASE DIAGRAM: THEORY



QCD PHASE DIAGRAM: THEORY



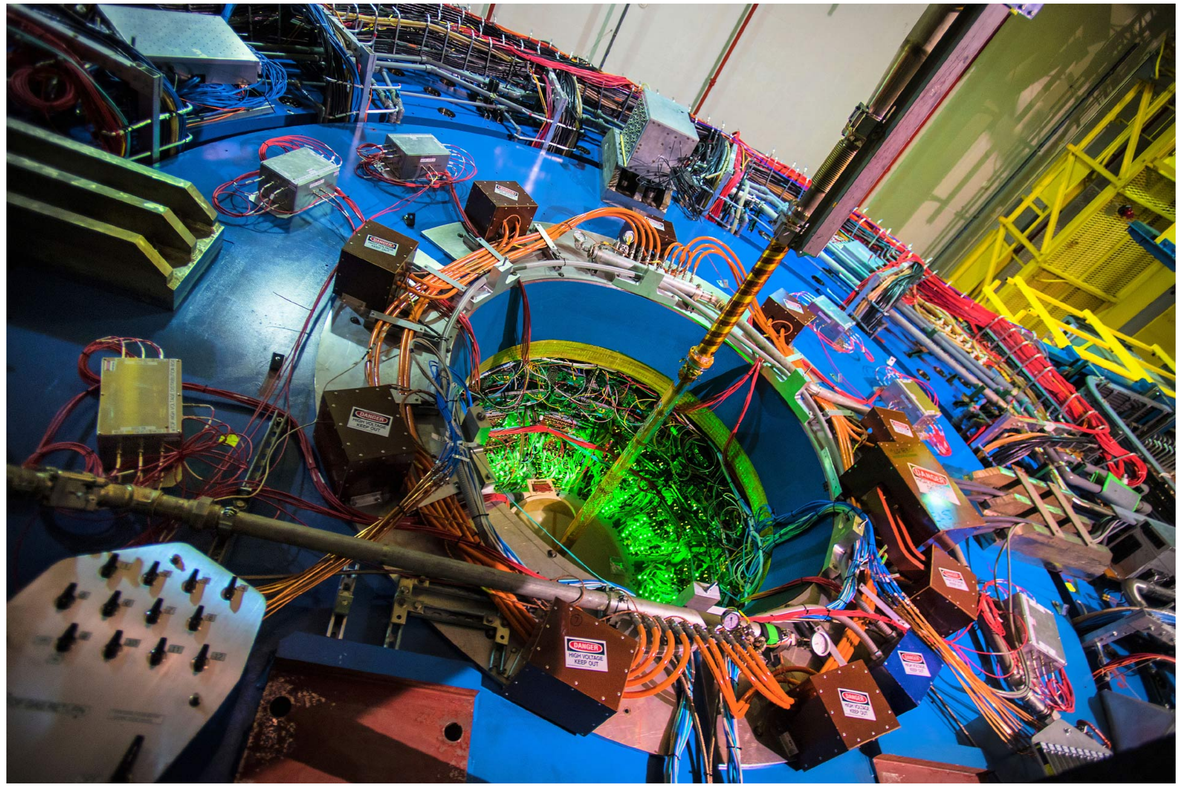
QCD PHASE DIAGRAM: THEORY



+ many, many more possibilities

all of which are based on model assumptions; no first-principles results

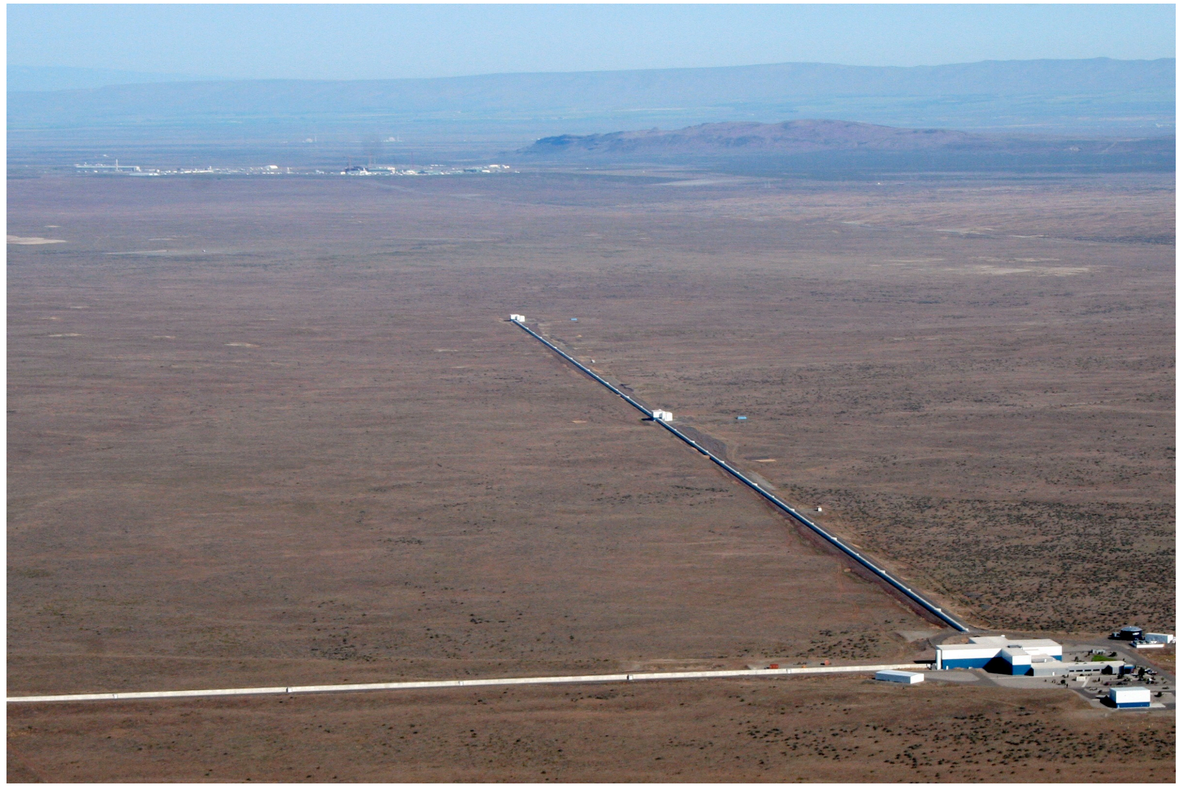
QCD PHASE DIAGRAM: EXPERIMENT



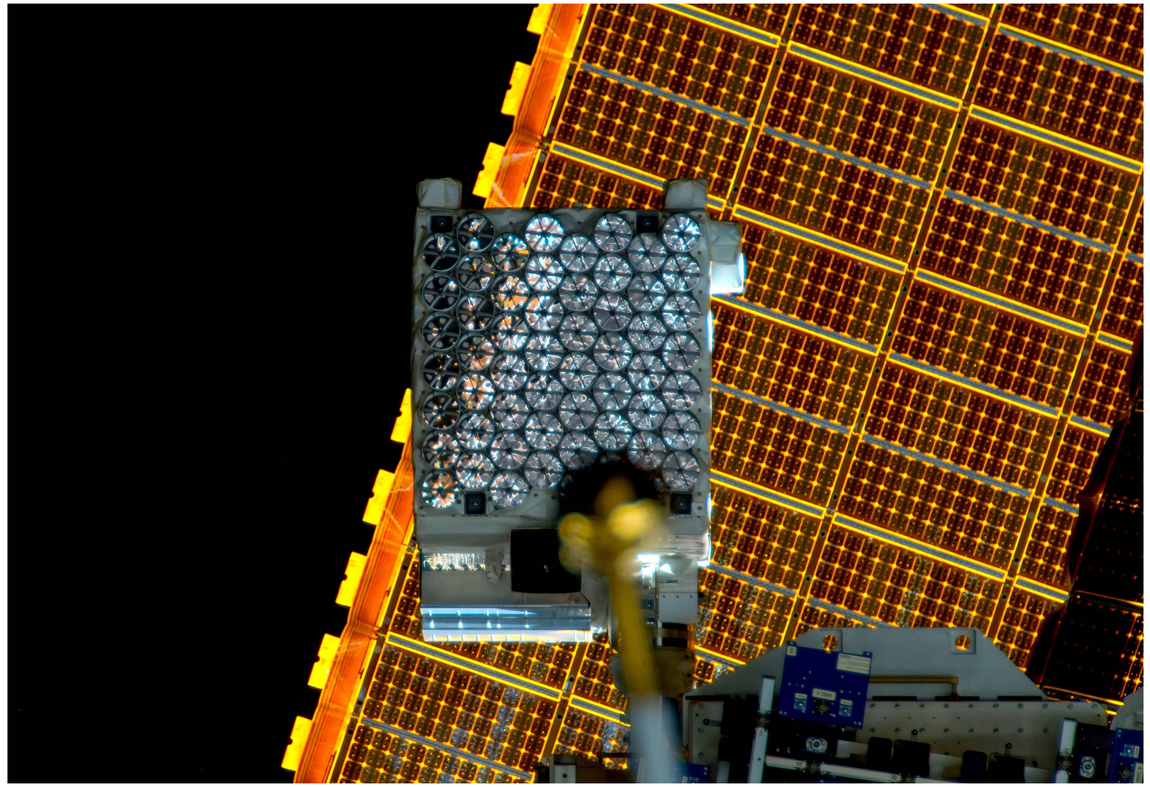
[STAR at RHIC]

[SIS100 at FAIR (as of Oct. 22)]

QCD PHASE DIAGRAM: EXPERIMENT



[LIGO]



[NICER]

QCD PHASE DIAGRAM

heavy ion collisions

particle spectra

neutron stars

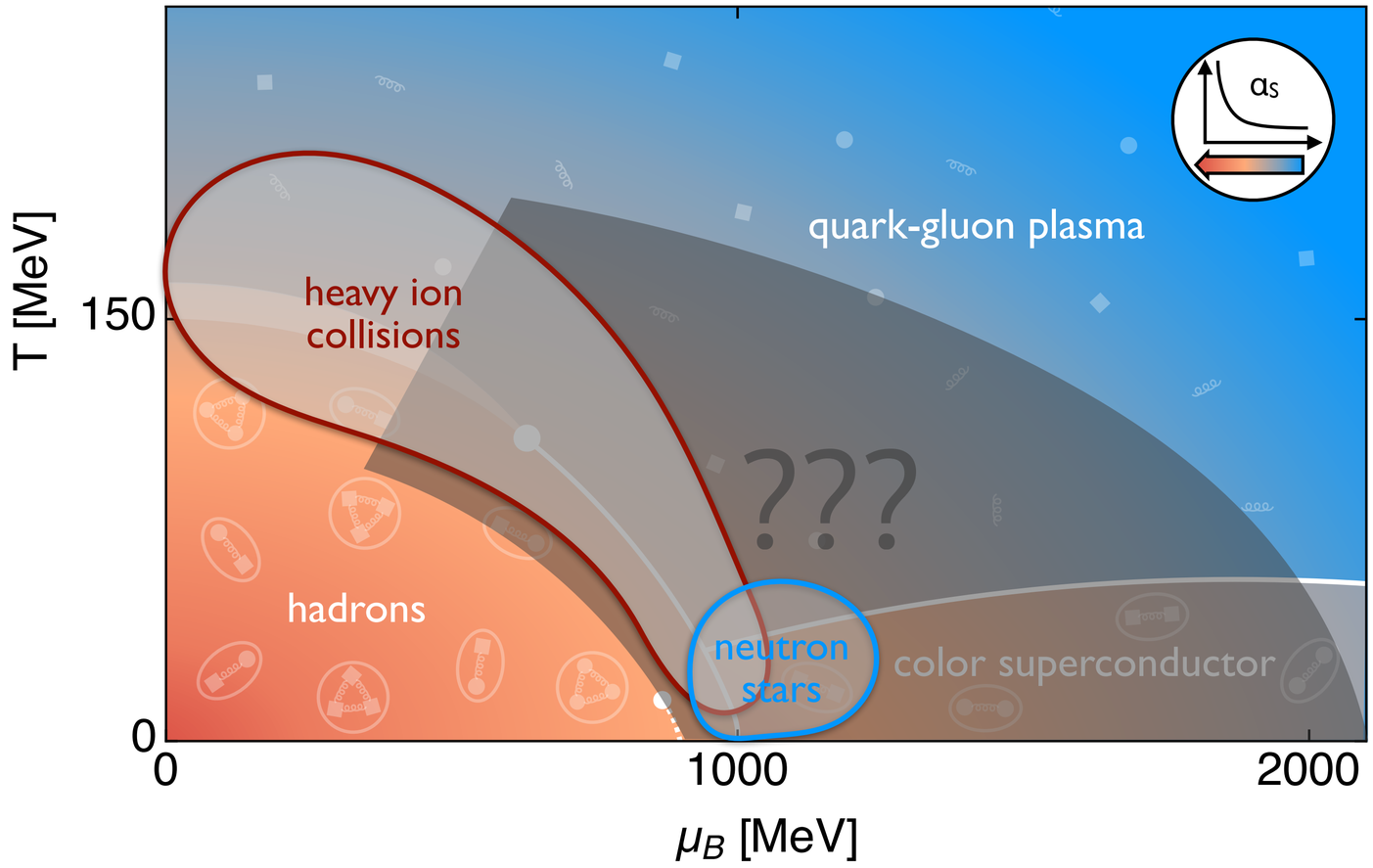
electromagnetic & gravitational radiation

phenomenology

hydro & transport

theory

equation of state & transport coefficients



QCD PHASE DIAGRAM

heavy ion collisions

particle spectra

neutron stars

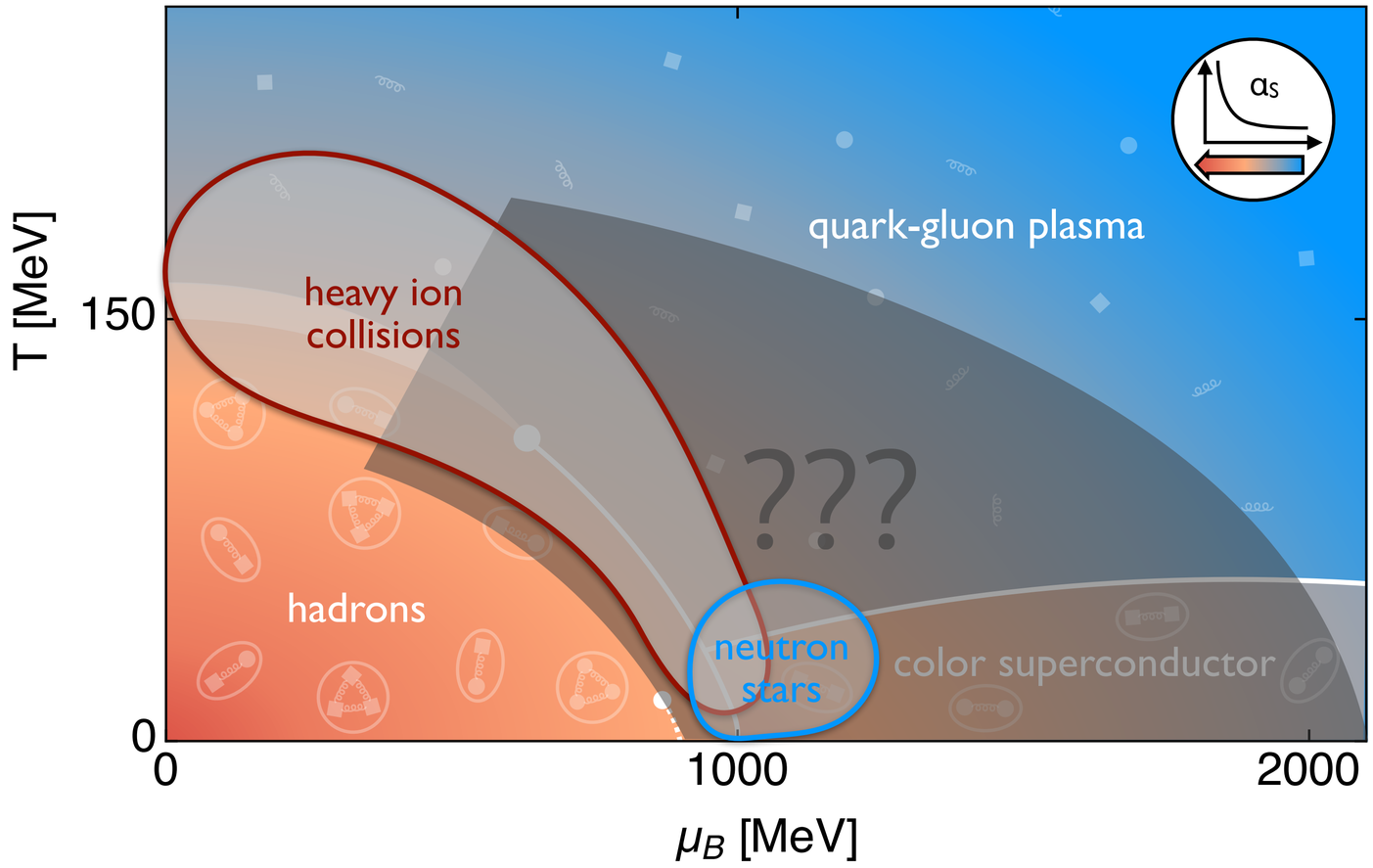
electromagnetic & gravitational radiation

phenomenology

hydro & transport

theory

equation of state & transport coefficients



→ **combined effort necessary!!!**

QCD PHASE DIAGRAM: (OPEN) QUESTIONS

deconfinement

- many indirect observables
- lattice QCD at $\mu_B = 0$

→

- observation? smoking guns?
- stringy fluid?

QCD PHASE DIAGRAM: (OPEN) QUESTIONS

deconfinement

- many indirect observables
- lattice QCD at $\mu_B = 0$

→

- observation? smoking guns?
- stringy fluid?

chiral symmetry restoration

- dilepton spectra: ρ peak
- spectral functions unknown

→

- models may describe data, but what can we learn from them?
- no smoking gun? (Brown-Rho scaling? melting ρ? but no a_1 peak)

QCD PHASE DIAGRAM: (OPEN) QUESTIONS

deconfinement

- many indirect observables
- lattice QCD at $\mu_B = 0$

→

- observation? smoking guns?
- stringy fluid?

chiral symmetry restoration

- dilepton spectra: ρ peak
- spectral functions unknown

→

- models may describe data, but what can we learn from them?
- no smoking gun? (Brown-Rho scaling? melting ρ? but no a_1 peak)

equation of state

- many sensitive measurements
- very little (no) first-principles information at $\mu_B > 0$

→

- how to get reliable results?
- sensitivity of the data sufficient?
- pheno-EoS useless? (modelling data ≠ understanding QCD?)

QCD PHASE DIAGRAM: (OPEN) QUESTIONS

deconfinement

- many indirect observables
- lattice QCD at $\mu_B = 0$

→

- observation? smoking guns?
- stringy fluid?

chiral symmetry restoration

- dilepton spectra: ρ peak
- spectral functions unknown

→

- models may describe data, but what can we learn from them?
- no smoking gun? (Brown-Rho scaling? melting ρ? but no a_1 peak)

equation of state

- many sensitive measurements
- very little (no) first-principles information at $\mu_B > 0$

→

- how to get reliable results?
- sensitivity of the data sufficient?
- pheno-EoS useless? (modelling data ≠ understanding QCD?)

heavy-ion colls.

- amazing machines
- but dirty, noisy and messy

→

- too many futile efforts? (CME, CEP, ...)
- signatures of new phases buried in noise/washed away?
- do we waste a lot of time understanding HIC with very little return regarding fundamental QCD?

QCD PHASE DIAGRAM: (OPEN) QUESTIONS

deconfinement

- many indirect observables
- lattice QCD at $\mu_B = 0$

→

- observation? smoking guns?
- stringy fluid?

chiral symmetry restoration

- dilepton spectra: ρ peak
- spectral functions unknown

→

- models may describe data, but what can we learn from them?
- no smoking gun? (Brown-Rho scaling? melting ρ? but no a_1 peak)

equation of state

- many sensitive measurements
- very little (no) first-principles information at $\mu_B > 0$

→

- how to get reliable results?
- sensitivity of the data sufficient?
- pheno-EoS useless? (modelling data ≠ understanding QCD?)

heavy-ion colls.

- amazing machines
- but dirty, noisy and messy

→

- too many futile efforts? (CME, CEP, ...)
- signatures of new phases buried in noise/washed away?
- do we waste a lot of time understanding HIC with very little return regarding fundamental QCD?

lattice QCD

- first principles & systematic
- sign problem

→

- useless to learn about PD at intermediate/large μ_B?

QCD PHASE DIAGRAM: (OPEN) QUESTIONS

deconfinement	• many indirect observables • lattice QCD at $\mu_B = 0$	→	• observation? smoking guns? • stringy fluid?
chiral symmetry restoration	• dilepton spectra: ρ peak • spectral functions unknown	→	• models may describe data, but what can we learn from them? • no smoking gun? (Brown-Rho scaling? melting ρ? but no a_1 peak)
equation of state	• many sensitive measurements • very little (no) first-principles information at $\mu_B > 0$	→	• how to get reliable results? • sensitivity of the data sufficient? • pheno-EoS useless? (modelling data ≠ understanding QCD?)
heavy-ion colls.	• amazing machines • but dirty, noisy and messy	→	• too many futile efforts? (CME, CEP, ...) • signatures of new phases buried in noise/washed away? • do we waste a lot of time understanding HIC with very little return regarding fundamental QCD?
lattice QCD	• first principles & systematic • sign problem	→	• useless to learn about PD at intermediate/large μ_B?
functional methods	• first principles • no sign problem	→	• useless without systematic error control? • how to control systematic errors?

QCD PHASE DIAGRAM: (OPEN) QUESTIONS

deconfinement	• many indirect observables • lattice QCD at $\mu_B = 0$	→	• observation? smoking guns? • stringy fluid?
chiral symmetry restoration	• dilepton spectra: ρ peak • spectral functions unknown	→	• models may describe data, but what can we learn from them? • no smoking gun? (Brown-Rho scaling? melting ρ? but no a_1 peak)
equation of state	• many sensitive measurements • very little (no) first-principles information at $\mu_B > 0$	→	• how to get reliable results? • sensitivity of the data sufficient? • pheno-EoS useless? (modelling data ≠ understanding QCD?)
heavy-ion colls.	• amazing machines • but dirty, noisy and messy	→	• too many futile efforts? (CME, CEP, ...) • signatures of new phases buried in noise/washed away? • do we waste a lot of time understanding HIC with very little return regarding fundamental QCD?
lattice QCD	• first principles & systematic • sign problem	→	• useless to learn about PD at intermediate/large μ_B?
functional methods	• first principles • no sign problem	→	• useless without systematic error control? • how to control systematic errors?

Should we sit on our hands and wait for quantum computers? And count our losses and do EIC physics?