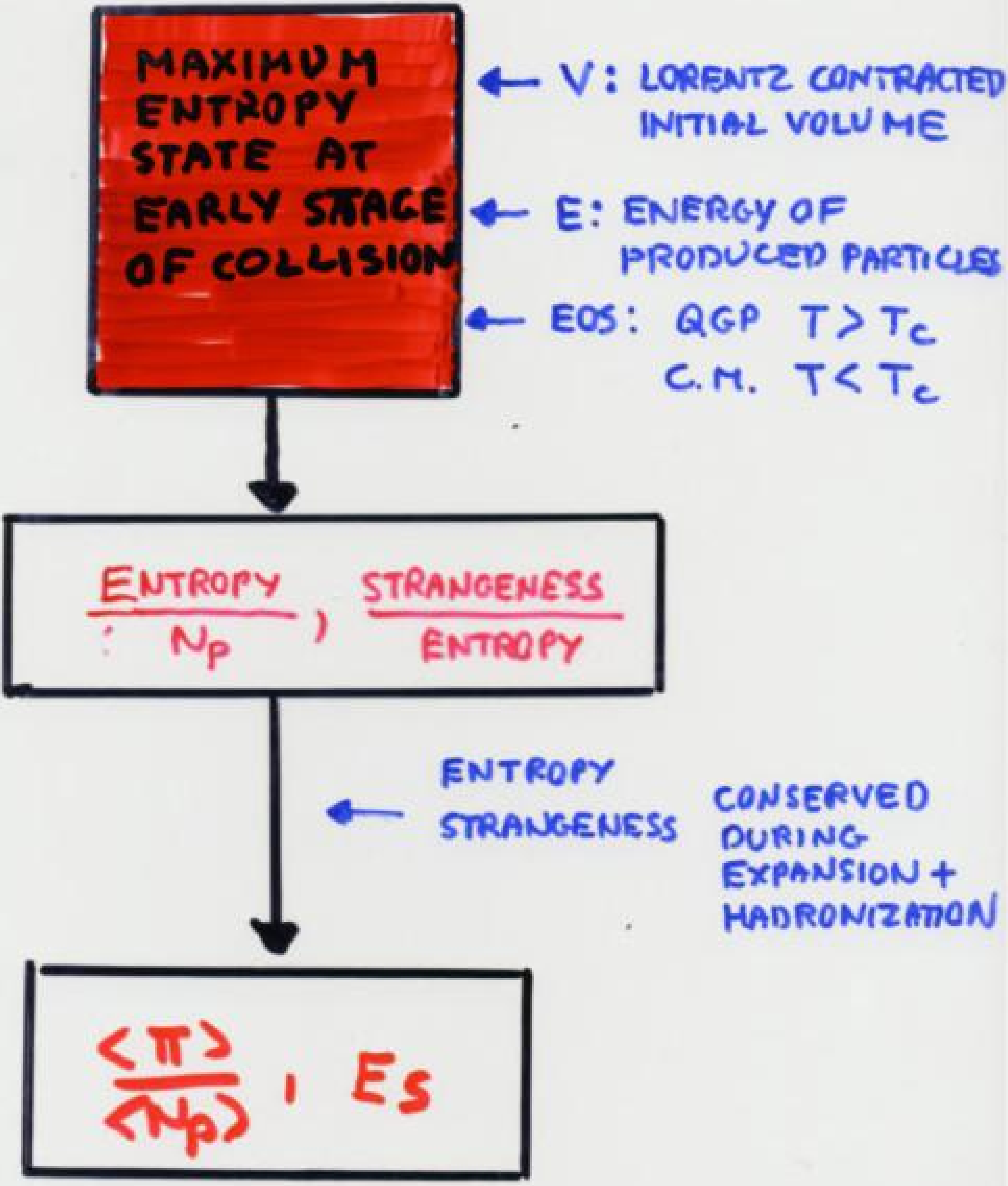
FLUCTUATIONS AND DECONFINEMENT

M.G.,
M. GORENSTEIN
ST. MRÓWCZYŃSKI

- SMES
- • FLUCTUATIONS IN SMES
- • • ENTROPY FLUCTUATIONS AND DECONFINEMENT

SMES

BASIC ASSUMPTIONS:



•• FLUCTUATIONS IN SMES

BOTH INITIAL QUANTITIES:

V AND E

CAN (SHOULD) FLUCTUATE FROM EVENT TO EVENT

FLUCTUATIONS OF V ARE NOT INTRESTING

THUS

LET US ASSUME THAT WE CAN FIX V USING ALL POSSIBLE EXPERIMENTAL TRICKS

THUS FURTHER WE CONSIDER E FLUCTUATIONS FOR FIXED V

ENTROPY FUCTUATIONS AND DECONFINEMENT

$$E(V,T) = \varepsilon(T) \cdot V$$

$$\Downarrow$$

$$\delta E = V \cdot \frac{d\varepsilon}{dT} \delta T + \varepsilon \cdot \delta V$$

I AND II PRINCIPLE OF THERMODYNAMICS

$$\Downarrow$$

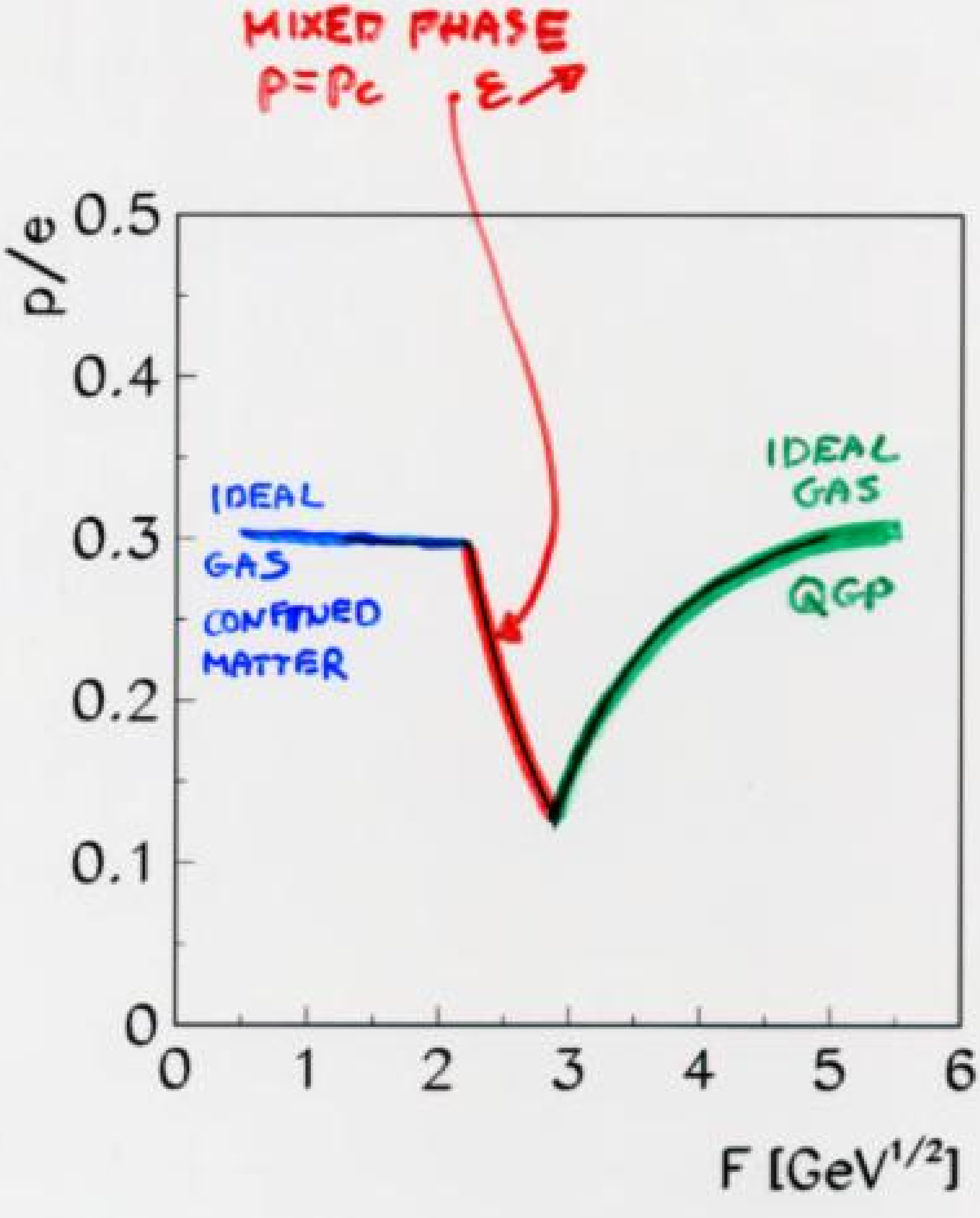
$$T\delta S = \delta E + p\delta V$$

$$T\,\delta S = V\frac{d\varepsilon}{dT} \cdot \delta T + (p+\varepsilon)\,\delta V$$

$\longleftarrow$ $(TS = E + pV)$

$$\downarrow$$

$$\frac{\delta S}{S} = \frac{1}{1 + p/\varepsilon} \cdot \frac{\delta E}{E} + \frac{\delta V}{V}$$

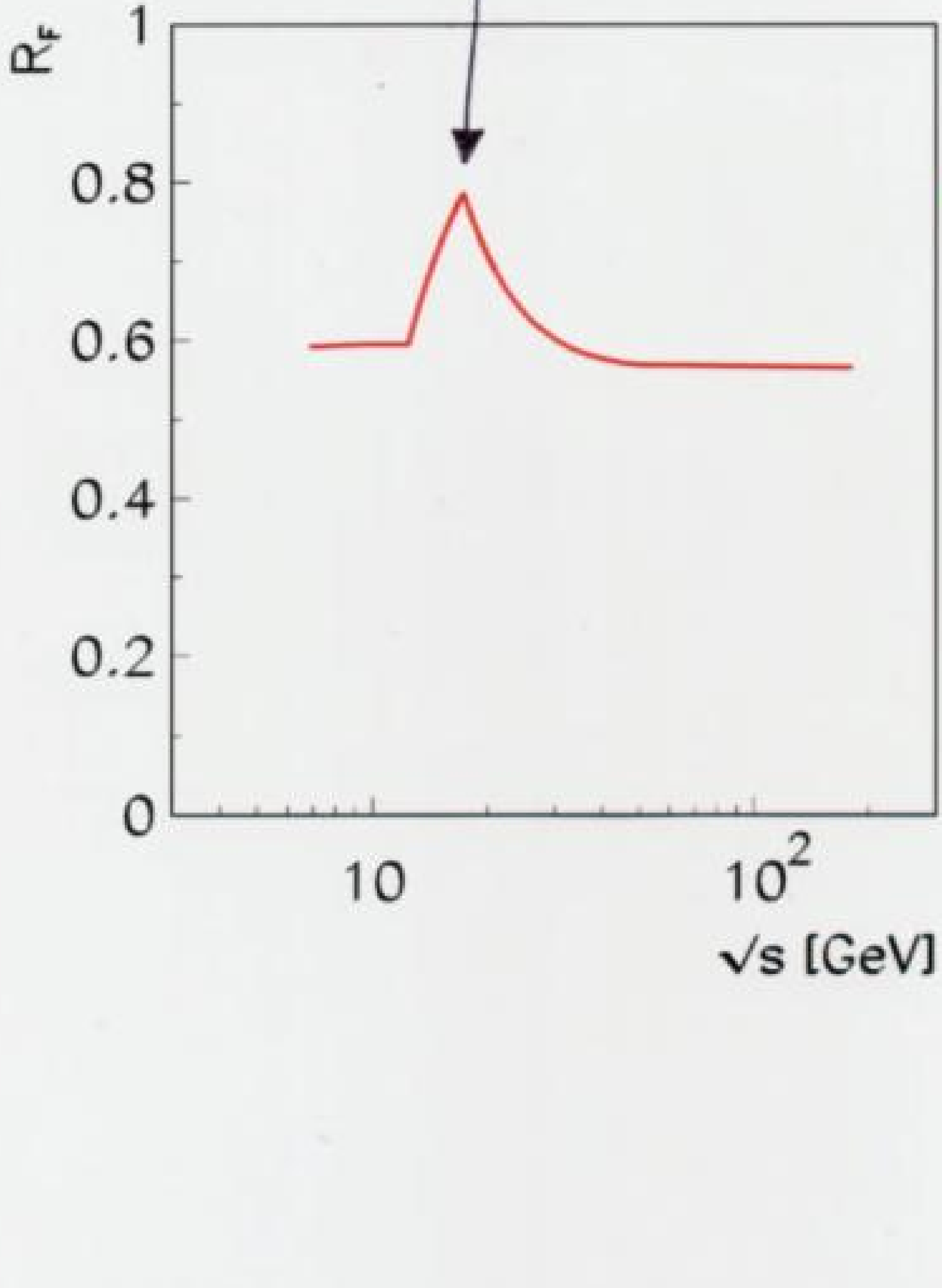

MIXED PHASE
p=pc , ε↗
p/e
0.5
0.4
0.3
0.2
0.1
0
IDEAL
GAS
CONFINED
MATTER
IDEAL
GAS
QGP
0
1
2
3
4
5
6
F [GeV^1/2]

ASSUMING $\delta V = 0$ WE GET:

$$\frac{\left(\frac{\delta S}{S}\right)^2}{\left(\frac{\delta E}{E}\right)^2} \left(\equiv R_F\right) = \left(1 + \frac{p}{\varepsilon}\right)^{-2}$$

ENTROPY TO ENERGY FLUCTUATIONS (R_F)

MAXIMUM AT THE END OF THE MIXED PHASE



"THE SHARK"