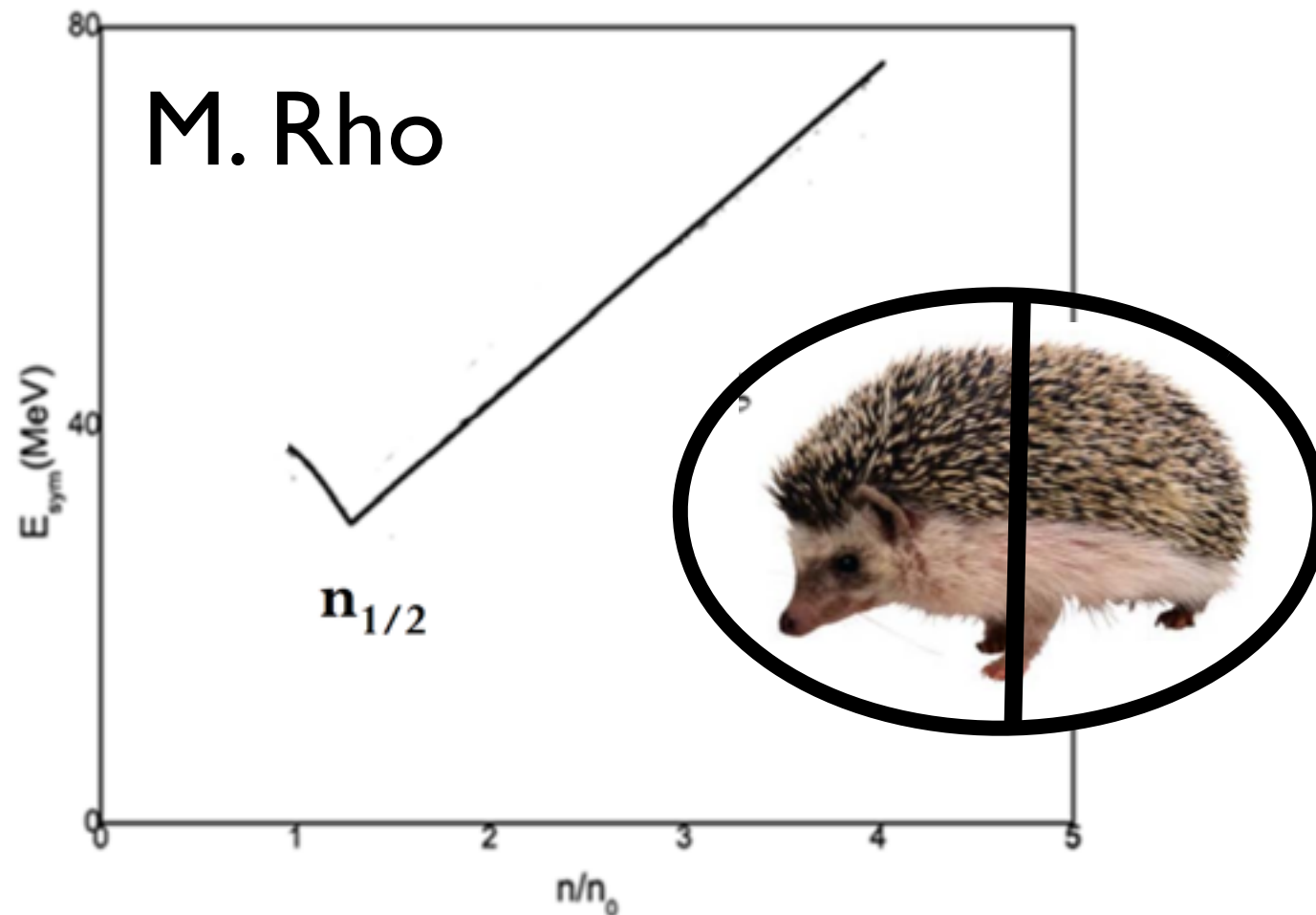


# Tuesday Discussion

- Bob's small NS radii  $\rightarrow$  implications for dense matter
- Theoretical error bars
- Important experimental data to be measured to constrain models and  $\text{sym } E$  at high densities.
- NS cooling and composition of dense matter.

# Small NS radii and sym E @ FRIB



- Sym E first decreases (or rises very slowly) just above  $n_0$  to give a small  $R_{1.4}$
- Then something happens (phase transition????) and sym E increases rapidly at high density to support two solar mass NS.
- Does this imply a small  $L$  and neutron skin in  $^{208}\text{Pb}$ ?
- Does this rule out direct URCA?

# Theoretical error bars

- Theory systematic errors
- Theory statistical errors
- Model dependent correlations
- What is meaning of model parameters?

# Important exp data to be measured for sym E at high E

- Four observables  $\pi^-/\pi^+$  ratio,  $n/p$  ratio,  $T/3\text{He}$  ratio, Kaons.
- Pions are hard and messy.
- $n/p$  ratio at high energy ( $n/p$  flows)
- New observable  $\pi^-$  for  $n$  rich system to  $\pi^-$  for  $p$  rich system.
- Look at “hard” photons?

# Archives for transport codes and exp data

- Chinese workshop
- Discuss later in week
- How does this relate to other groups at FRIB?

# NS cooling

- What fraction of NS have enhanced cooling? Are there very cold missing NS? Can one observe DURCA predicted low temperatures?
- What is way forward with cooling observations?
  - What is time averaged accretion rate for each system? [observe orbital period for field stars (accretion rate related to period) and measure surface temp.]
- What transport properties, composition ... are related to EOS?
- What about hyperons? give enhanced cooling if present.

# NS radii

- way forwarded? Radii of NS in globular clusters. Error bars of GC distances?