

# Superfluid Fermi Atom Gas in the Crossover Region and Neutron Star Equation of State

~similarity and difference on the viewpoint of phase-shift corrections~

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Our Poster

Consistent with  
Ultracold  
Fermi Gas

High Precision  
Experiment

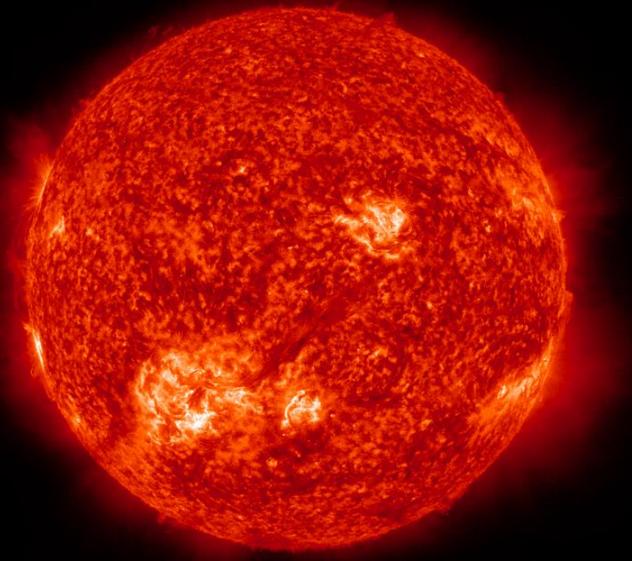
Neutron Star  
EoS

Diagrammatic  
Quantum Field  
Theory Approach

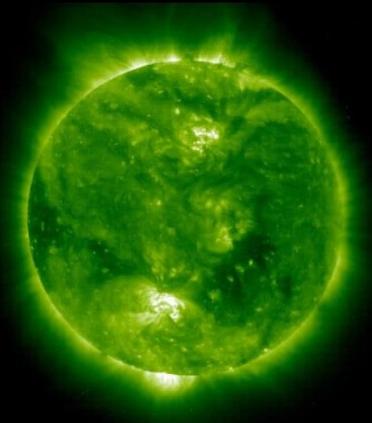
Few External  
Parameters

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Massive Star ( $M > 8M_{\odot}$ )



Neutron Star ( $M \approx 2M_{\odot}$ )



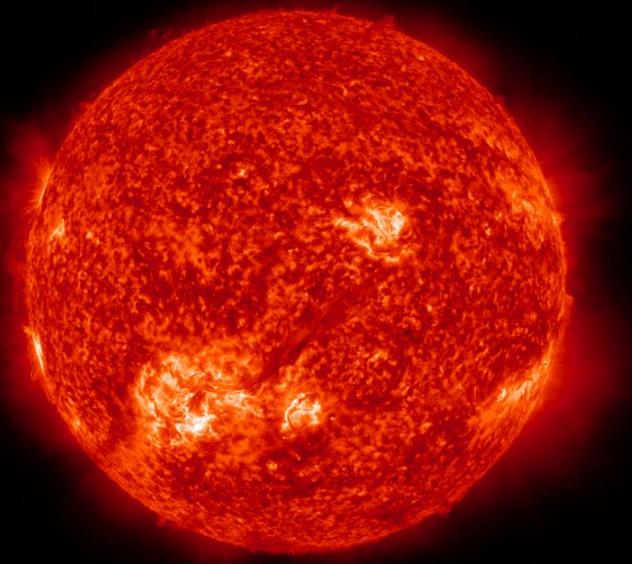
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## Equation of State

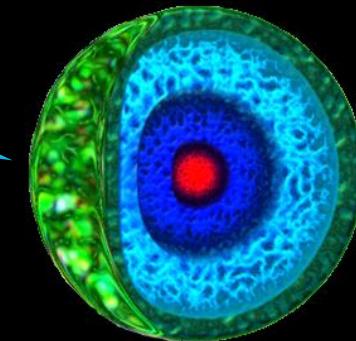
$$E = f(\rho, (n_n, n_p, n_\Lambda, \dots))$$

- Internal Structure
- Mass Constraint
- Radius Constraint

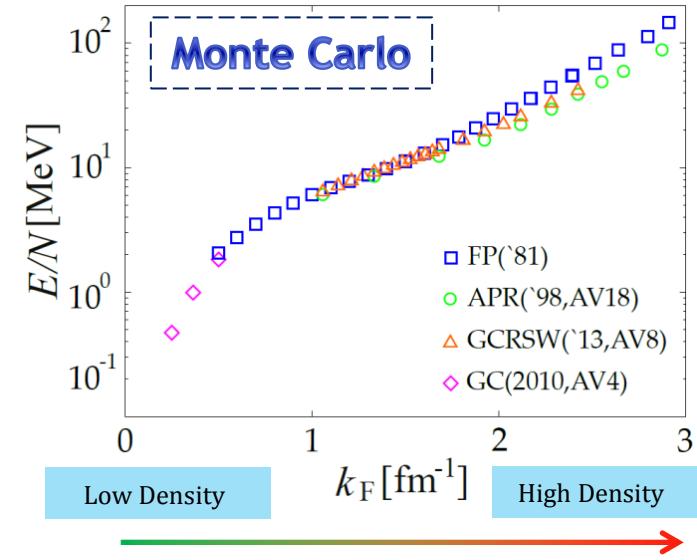
Massive Star ( $M > 8M_\odot$ )



Neutron Star ( $M \approx 2M_\odot$ )



Neutron Star EoS

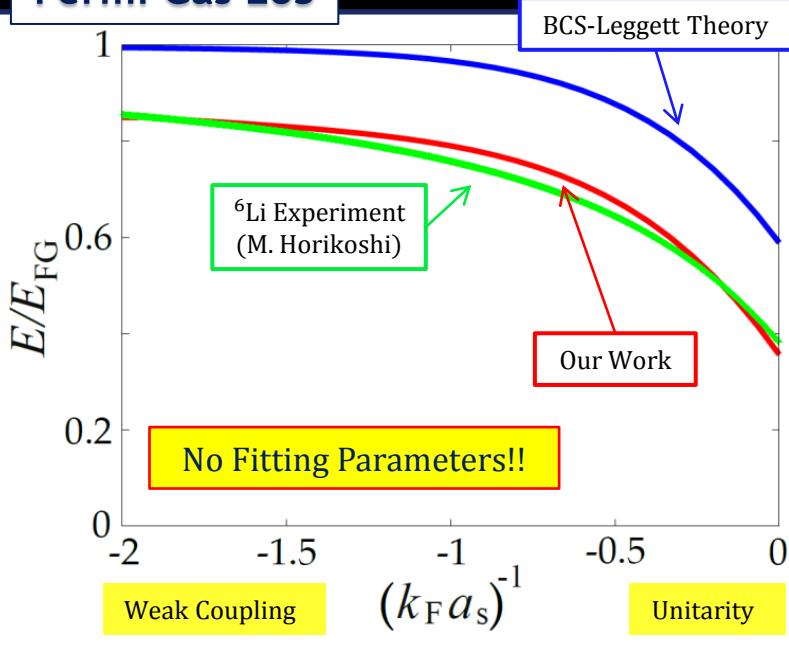


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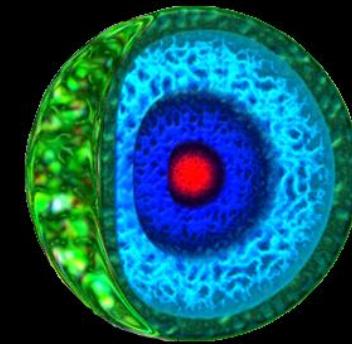
What can we do on Earth??



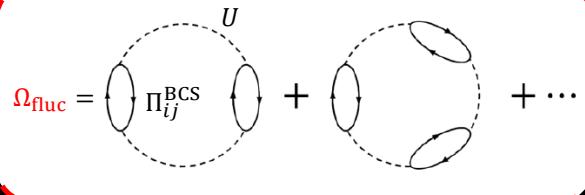
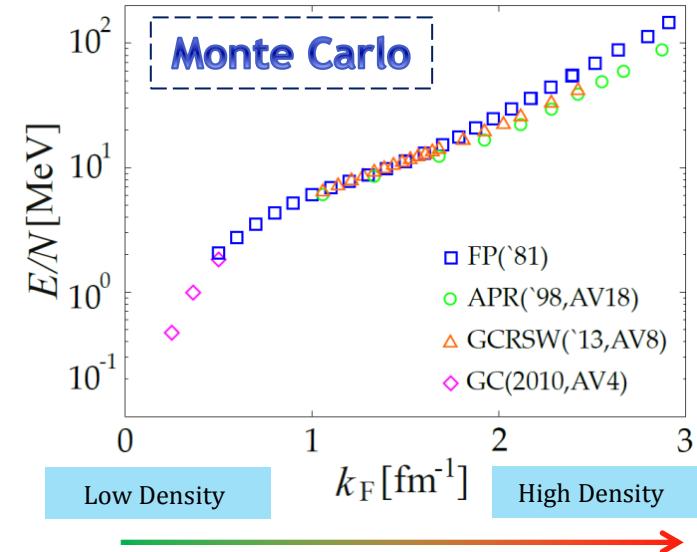
Fermi Gas EoS



Neutron Star ( $M \approx 2M_\odot$ )



Neutron Star EoS



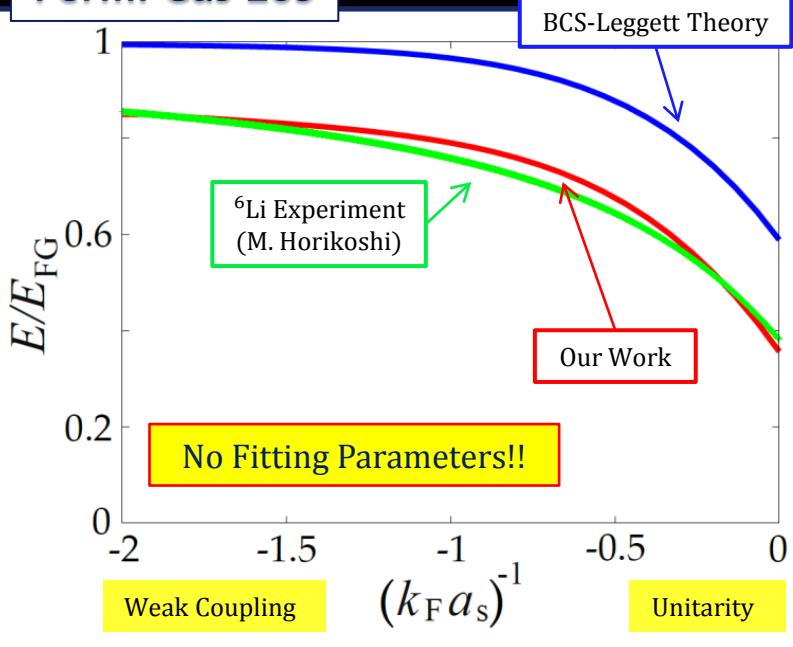
● 実験的整合性  
● 多体効果

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What can we do on Earth??

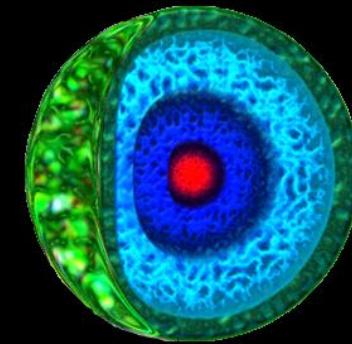


Fermi Gas EoS

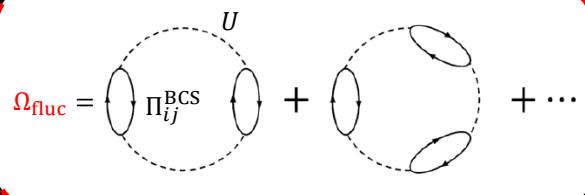
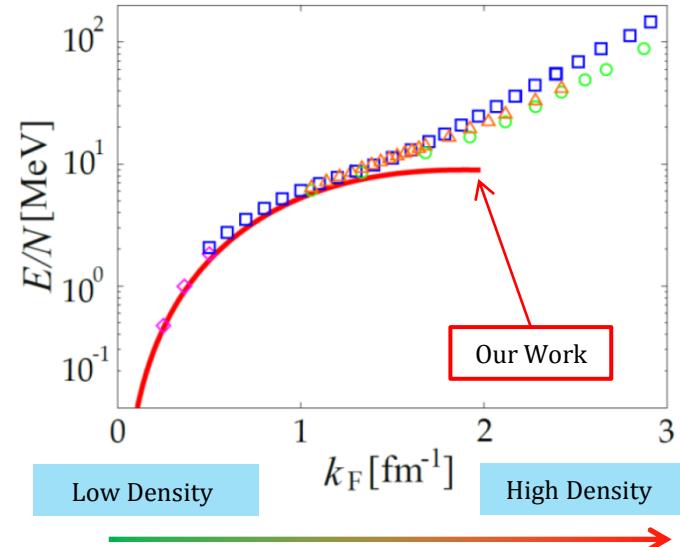


中性子の散乱特性

Neutron Star ( $M \approx 2M_\odot$ )



Neutron Star EoS



- 実験的整合性
- 多体効果

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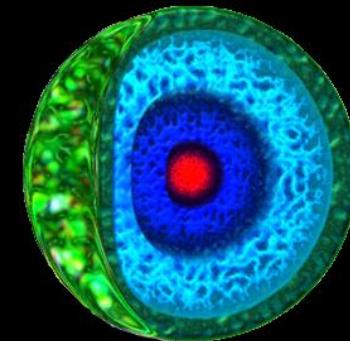
What can we do on Earth??



一人のフェルミ粒子にとって  
は小さな一歩だが、フェルミ多体系  
にとっては偉大な飛躍である



Neutron Star ( $M \approx 2M_{\odot}$ )



Neutron Star EoS

