

# — 第967回九大原子核セミナー —

講師： Pascal Naidon 氏 (理研仁科加速器科学研究センター)

演題： QCD-like phase diagram of resonantly interacting SU(3) Fermi gases

日時： 7月10日(金) 16:00~17:30

場所： (※ オンラインセミナー)

## 概要

Systems of fermions with two components (such as spin-1/2 electrons) are well-known to lead the phenomenon of Cooper pairing of different components, leading to fermionic superfluidity. Pair formation and superfluidity also occurs in fermionic systems with 3 components, leading to the so-called "colour superfluidity" where each of three different components (regarded as colours) can pair with one of the two others. However, another phenomenon can occur in these systems: the formation of trimers of three different components, due to the Efimov effect.

The interplay between Cooper pairing and the Efimov effect makes the phase diagram of such systems non trivial. Using an in-medium three-body equation and a non-self-consistent T-matrix approximation, we obtain a first insight into the temperature-density phase diagram of an SU(3)-symmetric unitary Fermi, that is to say a three-component fermionic system where all the scattering lengths between different components are infinite. The obtained phase diagram consists of three phases (trimer, normal, and colour superfluid phases) and bears some similarities with the conjectured phase diagram of quantum chromodynamics (QCD) at finite density and temperature.

連絡先: 九州大学 理学部 物理学教室 理論核物理研究室

TEL: 092-802-4101 (内線 8072)

金 龍熙 (kimu.ryonhi@phys.kyushu-u.ac.jp)

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