

Allegato A PROGETTO Scienza senza Frontiere – Brasile

Name of the doctoral program

Physics

Full degree Cotutelle

Title of the research activity

Unconventional quantum phases, finite temperature effects and dynamical stability of bosonic mixtures with two atomic species

Short description of the research activity

The ground state of two-species mixtures features a spatially complex many-phase structure which strongly depends on the trapping potential, atomic populations, temperature, and interaction strengths. The goal of this research is to determine by implementing QMC simulations the experimental conditions for which ground states including various unconventional phases are stable and thus observable. The dynamical stability of weakly excited states of mixtures at small but non-zero temperature will be studied within the dynamical Gutzwiller mean-field approach.

Scientific responsible (name, surname, role)

Vittorio Penna (associate professor)

Email: vittorio.penna@polito.it

Number of vacancies for XXVIII cycle (begin January 2013)

1 (one)

Specific requirements (experiences, skills)

The study program of candidates should include courses where the general principles, methods and fundamental tools of statistical physics and quantum mechanics have been presented.

Website of the research group (if any)

<http://areeweb.polito.it/ricerca/qdbf/>