



486th ASRC Seminar



Date: 10:30 - 12:00, 26th October

Location: Meeting room 302, ASRC Building

Speaker: Dr. Sydney GALES (CNRS, France)

Title: Extreme Landscape of Nuclear
Physics with SPIRAL2 at GANIL

The exploration of unknown region of the nuclear mass chart, in particular, the neutron rich side, raised new and challenging physics issues in the understanding of nuclei far from stability. The physics of weakly bound systems, the appearance of shell quenching, the interface with astrophysical problems prompted the study of new generation of “Radioactive Beam Facilities” with high luminosity and the development of associated new experimental tools. GANIL presently offers unique opportunities in nuclear physics and many other fields that arise from not only the provision of low-energy stable beams, fragmentation beams and re-accelerated radioactive species, but also from the availability of a wide range of state-of-the-art spectrometers and instrumentation. A few examples of recent highlights are presented. With the construction of SPIRAL2 over the next few years, GANIL is in a good position to retain its world-leading capability. As selected by the ESFRI committee, the next generation of ISOL facility in Europe is represented by the SPIRAL2 project to be built at GANIL (Caen, France). SPIRAL 2 is based on a high power, CW, superconducting LINAC, delivering 5 mA of deuteron beams at 40MeV (200KW) directed on a C converter+ Uranium target and producing therefore more 10^{13} fissions/s. The expected radioactive beams intensities in the mass range from $A=60$ to $A=140$, will surpass by two order of magnitude any existing facilities in the world. These unstable atoms will be available at energies between few KeV/n to 15 MeV/n. The same driver will accelerate high intensity ($100 \cdot A$ to 1 mA), heavier ions (Ar up to Xe) at maximum energy of 14 MeV/n. Under the 7FP program of European Union called*Preparatory phase*, the SPIRAL2 project has been granted a budget of about 4M€ to build up an international consortium around this new venture. The scientific pillars of the future facility, the status of the construction of SPIRAL2 accelerator and associated physics instruments in collaboration with EU and International partners will be presented.

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