Sujet de thèse : **Recherche de neutrino stérile avec un générateur de neutrinos au cérium 144 près du détecteur Borexino.**

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If neutrino oscillations are nowadays well established, several anomalies have been observed in short-baseline experiments with beam, radioactive source, and, recently, reactor neutrinos. A solution to this puzzle is provided by oscillations in one or more extra neutrinos, said sterile, with no ordinary weak interactions except those induced by mixing. SOX (Short distance neutrino Oscillations with BoreXino) will clarify the problem by looking at the rate deficits and at the oscillation patterns of electron neutrinos and anti--neutrinos. They are produced by two very intense radioactive sources, ^{144}Ce and ^{51}Cr, placed underneath the Borexino detector, at less than 10 m from the detector center. The candidate will be involved in several aspects of the experiment, among which: background simulations, data analysis, source shield design, calibration of the source activities and energy spectra, design and development of the calibrating detectors.