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Département d'astronomie

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Sterile neutrino Dark Matter
an overview and detection perspectives with INTEGRAL/JEM-X

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Abstract. One of the most plausible hypotheses of the Dark Matter (DM) nature is that it consists of elementary particles. However, none of the particles in frames of the Standard Model is able to explain the observed DM properties. Therefore, to build the DM particle candidate, one should extend the Standard Model. Among the proposed DM candidates are the right-handed (sterile) neutrinos, which could also explain the observed neutrino oscillations and the baryon asymmetry of the Universe. In frames of sterile neutrino model, there exists a compact window of parameters, which could be investigated by several ways. One of them is to detect the unidentified hard X-ray or gamma-ray line – the result of sterile neutrino DM decay. The conditions for a "best effective detector" are derived. It is shown that JEM-X, due to its exceptionally high FoV, can serve as an effective detector for the search of DM decay line, especially in the 10-20 keV energy range, in which the effective areas of both XMM-Newton and INTEGRAL/SPI are faded out.

Additional Information

The seminars are given in the ISDC "Pavillon" building
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