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CFA LECTURE SERIES

Alexander M. Kudin

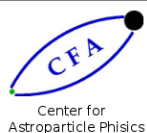
National University of Civil Protection of Ukraine, Kharkov, Ukraine

The NaI:Tl and CsI:Tl crystals for effective detection of X-rays and low energy charged particles

Recently, several experiments dedicated for direct dark matter particles search are planned or under construction in order to confirm or disprove the results of DAMA group on dark matter annual modulation observation. All these experiments are tried to develop a low background NaI:Tl crystal scintillators with high performance in energy interval 3-10 keV, which should meet following requirements: a) lowest internal background; b) as low as possible energy threshold; c) as high as possible energy resolution. Production of such detectors is required especial conditions, which should be fulfilled as dedicated crystal growth technique, high purity raw materials, technology for preventing of dead layer formation, and understanding nature of non-proportional response for low energy particles.

All these aspects of production of NaI:Tl crystal with low internal background and high performance with respect to low energy X-ray and charged particles will be discussed in a present talk.

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LNGS - "E. MAJORANA" ROOM



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