

Measurement of the Neutron Spectrum of $^{241}\text{AmLi}$ and ^{241}AmF Sources Using the Bonner Sphere Spectrometers

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Abstract : The Bonner Sphere Spectrometry was used to obtain the average energy, the fluence rate, and radioprotection quantities such as the personal and ambient dose equivalent of the $^{241}\text{AmLi}$ and ^{241}AmF isotopic neutron sources used in the Neutron Metrology Laboratory - LN. The counts of the sources were performed with six different spherical moderators around the detector. Through this, the neutron spectrum was obtained by means of the software named NeuraLN, developed by the LN, that uses the neural networks technique. The $^{241}\text{AmLi}$ achieved a result close to the literature, and ^{241}AmF , which contains few published references, acquired a result with a slight variation from the literature. Therefore, besides fulfilling its objective, the work raises questions about a possible standard of the $^{241}\text{AmLi}$ and about the lack of work with the ^{241}AmF .

Keywords : nuclear physics, neutron metrology, neutron spectrometry, bonner sphere spectrometers

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