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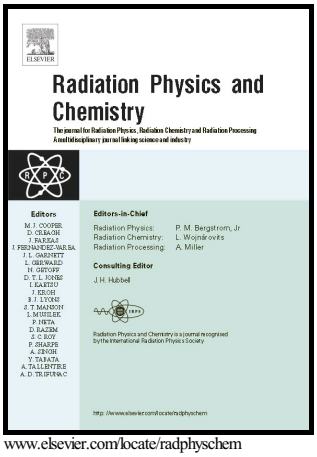
K. Manai, K. Elhamdi, M. Bhar



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Dose calculation using Tchebyshev wavelets with buildup correction in the tunisian gamma irradiator

K. Manai[a], K. Elhamdi[b], M. Bhar[b]

[a] *College of Science. University of Bisha, Bisha, Kingdom of Saudi Arabia.*
[b] *Unité de Recherche de Physique Nucléaire et des Hautes énergies, Faculté des Sciences de Tunis, Université Tunis El Manar, Tunisia*

Abstract

In this work, we focus on the buildup correction of dose calculation using Tchebyshev wavelets in the Tunisian gamma irradiation facility. The buildup effect of gamma rays was used to adjust absorbed dose calculation for different depth in two irradiated products (water and lPropane).

Keywords: Buildup factor; Dose calculation; Tchebyshev wavelets.

1. Introduction

Tchebyshev wavelet method is presented as an alternative to conventional methods of the absorbed dose determination such as direct measurements and Monte Carlo simulation. The benefits of the Tchebyshev wavelet method lies in its ability to provide sufficiently accurate results with a reduced computing time [2, 1].

In the case of irradiated product, the unpredictable behavior of scattered gamma rays requires the adjustment of the calculated dose. In this paper, we propose a dose correction method using the buildup factor. Products with two different densities were taken into account to study the buildup factor using the simulation of the total absorbed dose and that induced by only unscattered photons.

Email address: manaikais14@gmail.com (K. Manai)