**Monte-Carlo simulation of dose rate distributions around Three Amersham LDR small CS-137 sources**

CDC-type one and three active beads and CDCS Walksman type sources are available to use in source trains or manual afterloading systems in gynecological brachytherapy. In this work we present simulations of absolute dose rate in water with the Monte Carlo GEANT code around this sources. All the physical processes for low energy photons are implemented in GEANT: photoelectric effect, Compton dispersion, pair production and Rayleigh scattering. For electrons, multiple scattering and continuous energy loss were assumed.

The three sources were fully modeled from information provided by Amersham. In order to reach full scatter conditions, a cylinder of water 40 cm in height and 40 cm in diameter was assumed where a grid system with a score volume of $0.5\times0.5\times0.5$ mm$^3$ has been established. Up to $10^9$ histories were simulated. To estimate air-kerma strength the source was located in a $6\times6\times6$ m$^3$ dry air cube and kerma was scored with $2\times10^{10}$ histories.

Absorbed dose rate in water have been normalized to 1 $\mu$Gym$^2$h$^{-1}$ and are presented in the form of away-along table at distances up to 10 cm. In order to use the simulated data in the treatment planning programs based on TG43 formalism we have extracted from our simulation results the necessary dosimetry parameters, these are: the dose rate constant $\Lambda$, the radial function $g(r)$, the anisotropy function $F(r,\theta)$. The anisotropy factor $F(r)$ and the anisotropy constant $F$ were also obtained.