Contents

SYMBOLS and ACRONYMS

A	relative atomic mass
a_n	shape factor for a beta spectrum
B	backscatter factor
BG	Bragg-Gray conditions
CSDA	continuous slowing down approximation
c	velocity of light
C	parameter in Loevinger's equations
$D_p(d)$	personal absorbed dose at depth d mm
$D'(d,\vec{\Omega})$	directional absorbed dose at depth d mm, on a radius having direction $\vec{\Omega}$
$D_{Pl}(z,a)$	absorbed dose at distance z from a plane source of radius a
$\dot{D}_t$	absorbed dose rate in ICRU tissue (may denote $\dot{D}'(d)$ or $\dot{D}_p(d)$)
$D(r,E)$	absorbed dose at distance r, per point-source electron of energy E
$\dot{D}(r)$, $\dot{D}'(r)$	absorbed dose rate at distance r
$\dot{D}'(z)$	absorbed dose rate at depth z
d	depth in a medium
d_s	tissue thickness equivalent to air thickness s
E	kinetic energy of an electron
E_{max}	maximum kinetic energy of a beta spectrum
E_{res}	residual maximum energy of beta particles
$\bar{E}$	mean kinetic energy of a beta spectrum
e	charge on the electron
e	base of natural logarithms
$H_p(d)$	personal dose equivalent at depth d mm
$H'(d,\vec{\Omega})$	directional dose equivalent at depth d mm, on a radius having direction $\vec{\Omega}$
H_T	dose equivalent averaged over an organ
H_{GO}	dose equivalent averaged over the testes
I	mean excitation energy, ionization current in an extrapolation chamber
ISO	International Organization for Standardization
$j(r/r_o, E)$	scaled absorbed dose at distance r, for electrons of energy E
ℓ	spacing of extrapolation chamber electrodes (chamber depth)
M_A	molar mass
M_β,M_γ	dosimeter reading from β or γ rays
m_e	rest mass of electron (or positron)
m_ec^2	rest energy of electron (or positron)
m_{air}	air mass in the sensitive volume of an extrapolation chamber
N	number of atoms per unit mass
$N(W)$	number of electrons Mev^{-1} disintegration^{-1} at energy W in a beta-ray spectrum
N_A	Avogadro's constant
p	electron momentum divided by m_ec
R	distance from a point source
R_β	β-ray response of a detector relative to $H_p(0.07)$
R_γ	γ-ray response of a detector relative to $H_p(0.07)$
R_{max}	maximum range of beta rays
r	distance from a point source
r_0	CSDA range of an electron
r_{max}	maximum range of beta rays
S	total linear stopping power
S/ρ	total mass stopping power
S_{col}	linear collision stopping power
S_{rad}	linear radiative stopping power
S_W	linear stopping power of water
SF	screening factor in beta decay
s	distance along an electron track
$s_{t,air}^{BG}$	quotient of stopping powers of ICRU tissue and air under Bragg-Gray conditions
T	kinetic energy of an electron
T_{max}	maximum kinetic energy of a beta-ray spectrum