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# A Radiotherapy standard/conformal wedge IMRT-beamlet divergence angle limit exact method, mathematical formulation, and bioengineering applications

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Conformal/Standard radiotherapy wedges present several bioengineering-industrial design difficulties to obtain an optimal beam/beamlets-IMRT upper-surface radiation distribution, avoiding so that they could emerge undesirably from lateral walls instead the lower wedge plane. We calculated the improved exact beamlet limit-angle mathematical method for a standard/conformal wedge filter design. It was developed with basic mathematical algorithms, geometrical design, and Numerical Simulations linked to this mathematical formulation. All that was done using the AAA algorithm integral attenuation exponential factor [AEF] which modulates the convolution kernel of the integral dose delivery. Results comprise the geometrical design of the conformal wedge, showed in several sketches, and simulations with appropriate software. In addition, a series of geometrical formulas/tables for the beamlets limits, trigonometric AEF background, and mathematical formulation with the simulations of the AEF for a 2-steps conformal wedge are obtained.

## Biography

Francisco Casesnoves is a Researcher in Computational-Medical Technology/Physics and Applied Cyberbioengineering. He holds an MSc, BSc in Applied Physics/Mathematics (2001, Eastern Finland University), and Graduated with MPhil in Medicine and Surgery (1983 Graduated, 1985 MPhil-Excellent, Complutense Madrid University). He started specialization in Medical Physics/Engineering in 1983-5, after completion of Medicine & Surgery. His research field is Computational Bioengineering and Applied Nonlinear/Inverse Mathematical Optimization Methods. Actually he has 38 International Scientific Publications in these areas. His best achievement is the Numerical Reuleaux Method, whose applications cover Dynamics/Kinematics, Biomechanics, Aerospace-Systems, and Deformable-Solids Theory.

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