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Semi-analytical and Compactable Results for Cylindrically Symmetrical Capsules and “Diconoids” and their Corresponding Number Crunched Simulations ERIC STEINFELDS, KEITH ANDREW, Western Kentucky University — Our poster demonstrates the success of a Hybrid Algorithm of Greens functions and FEM computations in calculating the γ, n -currents and scalar fluxes of X-rays or n’s which come from isotopes which are located either on or inside of the exotic shapes of cigars and “diconoids.” This Hybrid Algorithm also can predict the electric fields from ions or e’s stored in such shapes. In “Classical Electrodynamics” by JD Jackson, treatment is given to electric fields which emanate from nonrandomly distributed charges within or on spheres and cylinders. However, little attention is given to determining the electric field which results from the distribution of electric charges within shapes such as the cyl-symmetrical cigar or the “diconoid.” The diconoid is defined as 2 opposing cones which are intersected by the common disk/edge. To a reasonable approximation, a diconoid shape or 3-D surface can be enclosed by a square dipyramid or to even better approximation by an octagonal dipyramid. See wolfram.com/SquareDipyramid.html for a fitting image. This poster shows advanced analytical calculations and semianalytical computations assisted by an FEM algorithmic modules with applications in shielding calculations, dosimetry, and micro-scale electrostatics.

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