Creating and Transforming a Second-Rank Antisymmetric Field Tensor $F^{\alpha\beta}$ using

Mathematica

Hee-Joong Yun¹ College of Techno-Sciences, Mokwon University, Daejeon 35349, Korea^a)

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List of figure for the paper.

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^{a)}Electronic mail: heejy@mokwon.ac.kr

I. LIST OF FIGURE

Figure 1: Manipulate of fields, $\vec{E_1}$ and $\vec{E_2}$ in Eq.(33) observed at the point P in K frame as a function of time(vt).

Figure 2: Manipulating platform visualizing whiskbroom pattern of the electric fields. While change the control parameters(b,t, β , ψ , γ) platform presents different patterns. Autorun platform while clicking \oplus top right .

Figure 3: Electric fields observed at the setup parameters values1 : values1 ={ $c = 1, \gamma = 3, q = 1, \beta = 0.4032, b = 0.1319, t = 0.1123$ }, (a) from the setup values1, (b) by change of $b \rightarrow 0.4713$ and $\beta \rightarrow 0.4013$ from values1 (c) by change of $b \rightarrow 0.6714$ only (d) by change of $t \rightarrow 1.1123 \times 10^{-5}$ only.

Figure 4: Particle of charge q moving at constant velocity \vec{v} passes an observation point P at impact parameter b.

Figure 5: Snapshots of *whiskbroom* pattern, those are lines of electric fields for a particle of the motion near the $\beta = 0.4100$ along to x^1 axis in K' frame. The patterns are snapped from the *shiskbroom* platform (Fig.2) at various β values.

II. FIGURES



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