PROBLEM SET 1: CLARIFICATION

Problem 2 of pset 1 begins as follows:

2. In some reference frame, the vector fields $\vec{U}$ and $\vec{D}$ have the components

$$U^\alpha \doteq (1 + t^2, t^2, \sqrt{2}t, 0)$$
$$D^\alpha \doteq (x, 5tx, \sqrt{2}t, 0) \ .$$

The scalar ρ has the value

$$\rho = x^2 + t^2 - y^2 \ .$$

(The relationship "LHS $\doteq$ RHS" means "the object on the left-hand side is represented by the object on the right-hand side in the specified reference frame.")

Clarification: The quantities t, x, and y in these vectors are just the usual Cartesian coordinates in the specified reference frame.

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