Generalized bumblebee models and Lorentz-violating electrodynamics MICHAEL SEIFERT, Indiana University — The breaking of Lorentz symmetry via a dynamical mechanism, with a tensor field which takes on a non-zero expectation value in vacuum, has been a subject of significant research activity in recent years. In certain models of this type, the perturbations of the "Lorentz-violating field" about this background may be identified with known forces. I present the results of applying this interpretation to the "generalized bumblebee models" found in a prior work. In this model, the perturbations of a Lorentz-violating vector field can be interpreted as a photon field. However, the speed of propagation of this "bumblebee photon" is direction-dependent and differs from the limiting speed of conventional matter, leading to measurable physical effects. Bounds on the parameters of this theory can then be derived from resonator experiments, accelerator physics, and cosmic ray observations.

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