

Review of: "Why a uniformly accelerated classical charge must radiate"

York Christian Gerstenmaier¹

¹ Technische Universität München

Potential competing interests: No potential competing interests to declare.

It seems to me quite clear that the premise is not correct. The uniformly accelerated particle with $v = 0$ at time $t = 0$ cannot have a magnetic field $H = 0$ in all space at $t=0$. For $t < 0$ the particle had undergone velocities $v < 0$ and EM radiation, so that the retarded field H at $t=0$ is necessarily different from zero. Only if the particle is at rest for $t < 0$ and starts accelerating at $t = 0$, the initial magnetic field is zero at that instant.

In order to make transformations from one inertial frame to an accelerated frame, the full differential geometric apparatus of general relativity is needed. However, it is still "special relativity", since in the absence of gravitational forces Riemannian space-time curvature in 4D is always zero. Nevertheless the spatial 3D curvature can be different from zero (non-Euclidian geometry) which explains many paradoxes of special relativity like the "twin paradox" and the paradox of the Lorentz-contraction of the circumference of a rotating disk on top of an equal disk at rest. A good literature on these topics is Landau. Lifshitz Vol. 2 on the classical theory of fields.