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**Special Relativistic effects may impact the conditions necessary for an event horizon** JOHN LAUBENSTEIN, Northern Illinois University (alumni) — The predictions of General Relativity (GR) have been well tested, yet the precision needed to differentiate GR from other potential theories lies well beyond the level of precision available through current (and even proposed) experimentation. As such, any effort to differentiate theories must go beyond observation and be based on exact mathematical relationships. This paper explores the derivation of the Schwarzschild metric with a particular focus on the value of the metric in weak gravity where GR reduces to Newtonian gravity. Specifically, this paper explores the ramifications of including Special Relativistic (SR) effects into the weak field approximation used to derive the value of the parameter $\frac{1}{S}$ in the Schwarzschild metric expressed as: $ds^2 = \left(1 + \frac{1}{Sr}\right)^{-1} dr^2 + r^2 \left(d\theta^2 + \sin^2\theta d\phi^2\right) + K\left(1 + \frac{1}{Sr}\right) dt^2$ . It can be shown that when SR effects are fully taken into account, including when v $<<$ $c$, that the conditions necessary to support the formation of the event horizon change. This paper explores whether these changes are significant enough to call into question the predictions of GR or whether they may be legitimately ignored as has been the past practice.

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