## Big Bang Model

**The current Big Bang Model is a QFT in a curved spacetime. Unfortunately, no such theory which includes QED or the standard model is mathematically well-defined; in spite of this, theoreticians claim to extract information from this hypothetical theory. On the other hand, the *super*-classical limit of the *not* mathematically well-defined QED in a curved spacetime is the mathematically well-defined Einstein-Maxwell-Dirac system. (One could get a similar system for the standard model.) As a super theory, EMD violates the positivity condition in the Penrose-Hawking Singularity Theorem. Thus, it is possible that there would be complete solutions without any singularities-for example, Black Stars. Furthermore, it is known that the Maxwell-Dirac system admits of solitonic solutions, i.e., *classical* electrons and photons. This is the kind of theory Einstein was hoping for. EMD is also a totally geometrized theory as a non-commutative geometry; here, the charge e and the mass m of the electron are geometric invariants of the non-commutative geometry analogous to pi! From the quantum mechanical point of view, EMD is a local hidden variables theory and hence cannot derive EPR type results. EPR type experiments were performed in the 1980's and confirmed quantum theory. Such applications as quantum cryptography and quantum computing require EPR type situations.**

**Even QED in Minkowski spacetime is not yet mathematically well-defined; there is even a $1,000,000 prize for making it so. The fantastic 10 digit agreement between the theoretical predictions of QED and the experimental results is a *miracle*. It would be good to acknowledge the unsatisfactory mathematical structure of this prediction. It starts from a mathematically undefined Feynman Integral, proceeds by making many very complicated manipulations, and ends up with a formal series that can be proved to be non-convergent! Physicists think of it as an asymptotic expansion, but they have no mathematical proof of this. I often joke that this agreement of theory and experiment is a new proof of the existence of God and that she loves physicists! There is no evidence that Wald's axioms, like Wightman's before him, will eventually include QED and/or the Standard Model. They may be beautiful, but irrelevant! It's still not clear whether we'll ever have a consistent QED or SM. Most physicists don't seem to be overly concerned by this issue and have retreated to being satisfied with *effective* field theories *all the way down*. Furthermore, effective field theory philosophy is merely a cover for having in practice abandoned the ideal of unity in exchange for the practice of applied mathematics.**