1052-83-183 **Brent O Young*** (`bojy@math.rutgers.edu`), Department of Mathematics, Rutgers University, Hill Center for the Mathematical Sciences, 110 Frelinghuysen Rd., Piscataway, NJ 08854-8019. *Derivation of the relativistic Vlasov-Poisson model with attractive coupling from N-body models.* Preliminary report.

The relativistic Vlasov-Poisson (rVP) model with attractive coupling is derived from a toy model of N classical point particles moving at relativistic speeds and interacting with (regularized) Newtonian gravity. The proof is a straightforward adaptation of the work of Neunzert and of Braun-Hepp for non-relativistic Vlasov models. Rather unconventional is a recent surmise by Kiessling and Tahvildar-Zadeh that rVP can be derived from a neutral two-species plasma model. The strategy for this derivation is explained and the first rigorous estimates are presented. (Received August 27, 2009)