Mr Suvrat Raju (Harvard) for discussions, and to an anonymous referee for comments that have greatly helped to improve the presentation of the paper.

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2. Preliminary versions of aspects of this paper have been circulating for some time, having been presented and discussed at various conferences and lectures over the past several years, e.g., "Simulating a tilt in the arrow of time: preliminary results," Seminar on *Some Aspects of Theoretical Physics*, Indian Statistical Institute, Calcutta, 14–15 May 1996, "The electrodynamic 2-body problem and the origin of quantum mechanics." Paper presented at the International Symposium on *Uncertain Reality*, New Delhi, 5–9 Jan 1998, "Relativity: history and history dependence." Paper presented at the *On Time* Seminar, British Society for History of Science, and Royal Society for History of Science, Liverpool, August 1999. "Time travel," invited talk at the International Seminar, *Retrocausality Day*, University of Groningen, September 1999, and in talks at the Universities of Southampton, Utrecht, Pittsburgh, etc.
3. Some attempts have been made to study the 2-body problem in 1 and 2-dimensions, and some approximation procedures have been suggested for three dimensions, but none of these are critically relevant to the question at hand. For a quick review see C. K. Raju, chap.*Time: Towards a Consistent Theory* (Kluwer Academic, Dordrecht, 1994) chap. 56. For the 1-body problem, see C. F. Eliezer, *Rev. Mod. Phys.* **19** 147(1947): G. N. Plass, *Rev. Mod. Phys.* **33**, 37–62. (1961) For the 2-body problem, see J. L. Synge, *Proc. R. Soc.* **A177** 118–139: (1940) R. D. Driver, *Phys. Rev.* **178** 2051–2057, (1969) D. K. Hsing, *Phys. Rev.* **D16** 974–82; (1977) A. Schild, *Phys. Rev.* **131**, 2762; (1963) C. M Anderssen and H. C. von Baeyer, *Phys. Rev.* **D5**, 802; (1972) *Phys. Rev.* **D5**, 2470; (1972). R. D. Driver, *Phys. Rev.* **D19**, 1098; (1979) L. S. Schulman, *J. Math. Phys.* **15**, 205–208, (1974); K. L. Cooke and D. W. Krumme, *J. Math. Anal. Appl.* **24**, 372–387; (1968). H. Van Dam and E. P. Wigner, *Phys. Rev.* **138B**, 1576; (1965). **142**, 838 (1966).
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6. Cf. Griffiths, *Electrodynamics*, 3rd edn., Eqs. (10.65), (10.66) and (10.67), pp. 438–439.
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