

Approach, Mathematical Surveys and Monographs 128, American Mathematical Society, Providence, RI (2006).

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published in *Reviews of Modern Physics*, whose impact on mainstream physics was to be no less profound.¹

Dirac, in his characteristic economic and precise style, was far ahead of the times. He envisaged dynamics as a relativistically invariant Hamiltonian theory based on any of three different classes of initial surfaces (space-like, time-like, or light-like). The structure of the theory, he demonstrated, depends on the subgroup of the Poincaré group (comprising rotations, Lorentz boosts, and translations in space and time) that leaves the initial surface unchanged. In particular, he showed that a null-like surface has an extra generator (compared to the space-like and time-like ones) that leaves the initial surface unchanged.

The significance of this result became clearer from a later “infinite momentum frame” formulation by Steven Weinberg which addresses dynamics on a null surface corresponding to a plane-wave light front.² In it, a generator of one particular symmetry transformation functions as a mass term. A dual generator from the part of the Poincaré group that changes the null surface serves as the theory’s Hamiltonian.

Thanks to Weinberg’s insight, the short Dirac paper got absorbed into

mainstream high-energy physics under the name of light-front dynamics—an indispensable tool for high-energy physics.

References

1. P. A. M. Dirac, *Rev. Mod. Phys.* **21**, 392 (1949).
2. S. Weinberg, *Phys. Rev.* **150**, 1313 (1966).

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Authors question book reviewer’s fairness

We read with the keenest interest Steve Lamoreaux’s critical review (*PHYSICS TODAY*, August 2010, page 50) of our book, *Advances in the Casimir Effect*. It was a great surprise for one of us (Mostepanenko), after many years of work at the D. I. Mendelev Institute for Metrology in Saint Petersburg, Russia, and numerous articles in *Measurement Techniques* and other metrological publications, to read that none of the authors “have a serious background in precision measurement techniques.” That statement is used as proof that our

Dirac postscript

The letters under “Remembrances of Dirac” (*PHYSICS TODAY*, May 2010, page 59) were very interesting to read. Graham Farmelo’s fascinating book *The Strangest Man*, the inspiration for the letters, brought to light several facets of Dirac’s impact on physics—not just his universal equation. I think perhaps one item was missing: an eight-page paper,

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