



Journal of Physics: Condensed Matter

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Manifestations of Berry's phase in molecules and condensed matter

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[Journal of Physics: Condensed Matter](#), [Volume 12](#), [Number 9](#)



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Dates

Received 28 July 1999

Citation

Raffaele Resta 2000 *J. Phys.: Condens. Matter* **12** R107

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DOI

<https://doi.org/10.1088/0953-8984/12/9/201>

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Abstract

Since the appearance of Berry's seminal paper in 1984, geometric phases have been discovered in virtually all fields of physics. Here we address molecules and solids, and we limit our scope to the Berry's phases of the many-electron wavefunction. Many advances have occurred in very recent years relating to the theory of such phases and their observable consequences. After discussing the basic features of Berry's phases in a generic quantum system, we specialize to selected examples taken from molecular physics and condensed matter physics; in each of these cases, a Berry's phase of the electronic wavefunction leads to measurable effects.

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Manifestations of Berry's phase in molecules and condensed matter, knowledge of the text, separated by narrow linear zones of weathered rocks, gives an isorhythmic dialectical character.

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