Haunted by Semiclassics: from optical lattices through muonium to magnetic monopoles

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One of Balazs Györffy's latter scientific loves was semiclassics [1,2]. As a PhD student in Bristol (1997-2001) I was exposed to this point of view and I was supposed to have been exploiting it in my research. I didn't, though, and as a result I've been haunted by semiclassics ever since. For this I consider myself very fortunate. I will describe how, later on, a semiclassical approach allowed me and Chris Hooley to understand a crucial feature of optical lattices [3]; relate a personal anecdote involving muonium were semiclassics also played a key role [4]; and, finally, present a new, semiclassical theory [5] predicting bound states between artifical monopoles and 2D electrons – a new twist on a century-old problem initiated by Poincaré [6].

References

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