Charge and spin dynamics in two-dimensional semiconductors

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Propositions

accompanying the dissertation

Charge and spin dynamics in two-dimensional semiconductors

1. Magnetic fields can be used to effectively control the spin and valley dynamics in monolayer TMDs. (Chapter 5).
2. A good working team may have advantages over a single very talented person. In the same way, single-layer TMDs can have much more potential when combined, for instance, with GaAs (chapters 3 and 4) or other 2D materials.
3. Reporting the reproduction of published results can be as valuable as the result itself. Endorsing reproducibility and comparing experiment differences strengthens the validity and credibility of scientific breakthroughs.
4. Government bodies should listen to science. We had strong examples of what happens when a government does, or does not, follow this rule during the COVID-19 pandemic, by comparing what happened in different countries or even in the same country at different moments in time.
5. The evaluation of a researcher solely on their h-index is detrimental to academia. Prioritizing quantity over quality has led to the proliferation of predatory journals and triggered a significant migration of skilled scientists away from academia.
6. You can learn everything by yourself but supervisors are there to guide and speed up the process.
7. Understanding a physical process shows us the beauty of nature and being able to predict how it evolves demonstrates the capabilities of human knowledge. However, being able to control physical phenomena is one of the most amazing parts of doing science. It reveals the validity of our theories and empowers us to use our discoveries for the betterment of society.
8. International programs aimed at enhancing the scientific quality of an underdeveloped country, through scholarships or spontaneous collaborations, are of greater benefit for individuals rather than for the country. For a real advance in the academic level in the global south, it is necessary to change public policies to allow for larger funding with a well-oriented plan for its destination.
9. "The whole problem with the world is that fools and fanatics are always so certain of themselves and wiser people are so full of doubts." - Bertrand Russell

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