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## 韩鹏

副教授

所属学科	光学
研究方向	半导体光电子学, 半导体载流子超快动力学及相关领域
招生方向	光学、凝聚态物理
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### 个人简介

韩鹏, 首都师范大学, 物理系。中国科学院物理研究所获光学博士学位, 博士期间主要从事半导体低维系统光学及电学性质的研究工作。于2013年加入首都师范大学物理系从事教学科研工作, 主要从事半导体低维系统中光生载流子超快动力学过程及相关领域的研究工作。相关研究成果发表于Appl. Phys. Lett., Phys. Rev. B, New J. Phys., J. Phys. D等国际学术期刊。现主持国家自然科学基金青年项目、国家自然科学基金面上项目及北京市教育委员会科技面上项目各一项。

### 研究方向

主要从事半导体低维系统中光生载流子超快动力学过程及相关领域的研究工作

- 1、应用泵浦-探测方法研究低维半导体系统中光生载流子超快动力学过程;
- 2、开展低维半导体系统中电子态、激子态及其动力学过程相关机理研究;
- 3、表面态, 表面声学波及表面等离子体波等对半导体材料光学性质的影响。

### 科研成果

1. **Peng Han**, Danis Antonov, Jörg Wrachtrup, and Gabriel Bester\* "Surface-bound state in nanodiamonds", Phys. Rev. B **18**, 113052 (2017).
2. Tongyun Huang, **Peng Han**\*, Xinke Wang, Jiasheng Ye, Wenfeng Sun, Shengfei Feng and Yan Zhang, "Theoretical study on dynamic acoustic modulation of free carriers, excitons, and trions in 2D MoS<sub>2</sub> flake", J. Phys. D: Appl. Phys. **50**, 114005 (2017).

3. Tongyun Huang, **Peng Han\***, XinkeWang, Shengfei Feng, Wenfeng Sun, Jiasheng Ye, and Yan Zhang, "Theoretical study on ultrafast dynamics of coherent acoustic phonons in semiconductor nanocrystals ", J. Phys. D: Appl. Phys. **49**, 185101 (2016).
4. Tongyun Huang, **Peng Han\***, XinkeWang, Shengfei Feng, Wenfeng Sun, Jiasheng Ye, and Yan Zhang, "Phonon induced pure dephasing process of excitonic state in colloidal semiconductor quantum dots", Superlattice and Microstructures, **92**, 52 (2016)
5. **Peng Han** and Gabriel Bester\* "Band gap renormalization of diamondoids: vibrational coupling and excitonic effects", New J. Phys. **18**, 113052 (2016).
6. **Peng Han**, and Gabriel Bester\*, "Heavy strain conditions in colloidal core-shell quantum dots and their consequences on the vibrational properties from ab initio calculations", Phys. Rev. B **92**, 1254238 (2015).
7. **Peng Han**, and Gabriel Bester\*, "Carrier relaxation in colloidal nanocrystals: Bridging large electronic energy gaps by low-energy vibrations", Phys. Rev. B **91**, 085305 (2015).
8. **Peng Han** and Gabriel Bester, "Large nuclear zero-point motion effect in semiconductor nanoclusters" , Phys. Rev. B **88**, 165311 (2013).
9. **Peng Han**, Linas Vilciauskas, and Gabriel Bester\*, "Vibron-vibron coupling from ab initio molecular dynamics simulations of a silicon cluster" , New. J. Phys. **15**, 043039 (2013).
10. **Peng Han** and Gabriel Bester\*, "Confinement effects on the vibrational properties of III-V and II-VI nanoclusters" , Phys. Rev. B **85**, 041306(R) (2012) (Rapid Communication).
11. **Peng Han** and Gabriel Bester\*, "First principle calculations of the electron-phonon interaction in semiconductor nanoclusters" , Phys. Rev. B **85**, 235422 (2012).
12. **Peng Han** and Gabriel Bester\*, "Insights about the surface of colloidal nanoclusters from their vibrational and thermodynamic properties" , J. Phys. Chem. C **116**, 10790 (2012).
13. **Peng Han** and Gabriel Bester\*, "Interatomic potentials for the vibrational properties of III-V semiconductor nanostructures" , Phys. Rev. B **83**, 174304 (2011).
14. **Peng Han**, Hui-bin Lu, Kui-juan Jin\*, Chun-lian Hu, and Guo-zhen Yang, "The mechanism study on colossal magnetoresistance effect in perovskite oxide heterostructures" , Phys. Lett. A **375**, 1690 (2011)

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