戴小玉教师简介

一、 个人基本情况：

姓　　名：戴小玉

性　　别：女

出生年月：1979.7

民　　族：汉

职称职务：副教授

政治面貌：中共党员

最后学历：博士

最高学位：博士

工作单位：温州大学电气与电子工程学院

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二、 从事研究的专业领域及主要研究方向

新型生物传感器、新型拓扑电路传感器、微波器件、非线性光纤光学。入选2022-2024年度全球2%顶尖科学家 “年度科学影响力排行榜”、深圳市海外高层次人才（C 类）；曾获2023年度湖南大学教师教学基本功大赛二等奖、2022年度湖南省电子信息教学案例设计竞赛三等奖、2012年度湖南大学优秀博士论文、2010年度湖南省自然科学奖二等奖（排名第五），超常材料中光和电磁波传输的新规律和新现象。

三、 主要工作经历

- 2025.7-至今　　温州大学，电气与电子工程学院，副教授
- 2020.06-2025.06　　湖南大学，电气与信息工程学院，副教授
- 2014.04-2020.05　　深圳大学，微纳光电子研究院，　副教授
- 2009.10-2014.03　　湖南大学，电气与信息工程学院，助理教授
- 2013.04-2014.03　　新加坡南洋理工大学，电子工程系，访问学者
- 2011.05-2014.02，　湖南大学，物理与微电子科学学院，博士后；
- 2008.04-2009.04，　美国普渡大学，电子工程系，访问学者；
- 2002.07-2004.08　　九江学院，机械与材料学院，助教

四、近年来主持的主要教学科研项目

- 国家自然科学基金面上项目，双曲超表面等离子体特性及其在高灵敏度 SPR 生物传感器中的应用，2019.01-2022.12，主持
- 国家自然科学基金青年项目，石墨烯基双曲超材料的可调光学特性及其应用，2016.01-2018.12，主持
- 广东省自然科学基金面上项目，基于双曲超材料的连续束缚态形成机理及应用探索，2023.01-2025.12 ，主持
- 湖南省自然科学基金面上项目，双曲超表面拓扑暗点生物传感器机理及应用研究，2021.01-2023.12，主持
- 深圳市科技计划项目面上项目，基于双曲超材料的超灵敏 SPR 生物传感器研究，2019.03-2021.03，主持
- 深圳市科技计划项目面上项目，石墨烯双曲超材料基本光学特性研究和主动器件的设计，2015.08-2018.08，主持。
- 深圳市高层次人才项目（孔雀计划 C 类），超常材料中的非线性色散效应及孤子稳定性研究，2015.01-2018.12，主持。
- 教育部留学回国人员启动项目，超常材料中的非线性衍射、衍射管理和空间孤子研究，2015.01-2017.12，主持。
- 教育部博士点基金基金，人工电磁特异介质中非线性色散效应对时空孤子传输的影响和调控效应研究，2013.01-2015.12，　主持。
- 中国博士后科学基金面上项目，超常材料中光学孤子的形成和调控机理及传播特性研究，2012.06-2014.06，主持。
- 湖南省自然科学基金面上项目，基于超常材料的激光增益介质的探索研究，2010/12-2013/12，主持。

五、近年完成的主要教学科研成果目录（含论文、课题、科研获奖、教学成果）

1. Changyou Luo, Yongqiang Kang, **Xiaoyu Dai (通讯作者)**, Yuanjiang Xiang. Coherent Control of the Goos-Hänchen Shift in a Cavity Containing a Five-Level Double-Ladder Atomic System, **IEEE Photonics Journal,** 15, 7900706 (2023).

2. Jipeng Wu, Jiaojiao Liang, Di Huang, Yuanjiang Xiang, **Xiaoyu Dai (通讯作者)**. Tunable enhanced transmitted group delays of circular polarization enabled by resonant tunneling in Ag/multi-Weyl semimetal/Ag trilayers, **Results in Physics,** 52, 106789 (2023).
3. Jipeng Wu, Rongzhou Zeng, Jiaojiao Liang, Di Huang, Yuanjiang Xiang, **Xiaoyu Dai (通讯作者)**. Faraday rotation enhancement and characteristic of the Weyl node separation and tilt degree by resonant tunneling, **Journal of Applied Physics,** 133, 233102 (2023).
4. Jipeng Wu, Yuanjiang Xiang, **Xiaoyu Dai (通讯作者)**. Tunable broadband compact optical isolator based on Weyl semimetal, **Results in Physics,** 46, 106290 (2023).
5. Ji-Peng Wu, Yuan-Jiang Xiang, **Xiaoyu Dai (通讯作者)**. Enhanced and tunable Imbert-Fedorov shift based on epsilon-near-zero response of Weyl semimetal, **Chinese Physics B**, 32, 037503 (2023).
6. Yuwen Bao, Mengjiao Ren, Chengpeng Ji, Jun Dong, Leyong Jiang, **Xiaoyu Dai (通讯作者)**. Terahertz Biosensor Based on Mode Coupling between Defect Mode and Optical Tamm State with Dirac Semimetal, **Biosensors,** 12, 1050 (2022).
7. Jipeng Wu, Yuanjiang Xiang, **Xiaoyu Dai (通讯作者)**. Enhanced and tunable asymmetric Imbert − Fedorov and Goos − Hänchen shifts based on epsilon-near-zero response of Weyl semi-metal, **Journal of Physics D: Applied Physics**, 33, 395106 (2022).
8. Jie Liu, Xiaoya Lu, **Xiaoyu Dai (通讯作者)**, Yuanjiang Xiang*. Rainbow trapping and releasing based on the topological photonic crystals and a gradient 1D array, **Journal of Applied Physics,** 132, 173105 (2022).
9. Hailin Xu, Zhitao Lin, **Xiaoyu Dai (通讯作者)**. MoTe2 quantum dots-based all-optical switching, **Optics Communications,** 506, 127573 (2022).
10. Zhongfu Li, Yuanjiang Xiang, Shixiang Xu, **Xiaoyu Dai (通讯作者)**. Ultrasensitive terahertz sensing in all-dielectric asymmetric metasurfaces based on quasi-BIC, **Journal of the Optical Society of America B**, 39, 286 (2021).
11. **Xiaoyu Dai**, Banxian Ruan, Yuanjiang Xiang. Self-referenced refractive index biosensing with graphene fano resonance modes, **Biosensors,** 11, 400 (2021).
12. Yamei Liu, Qiwen Zheng, Hongxia Yuan, Shenping Wang, Keqiang Yin, **Xiaoyu Dai (通讯作者)**, Xiao Zou, Leyong Jiang. High sensitivity terahertz biosensor based on mode coupling of a graphene/Bragg reflector hybrid structure, **Biosensors,** 11, 377 (2021).
13. Hao Chen, Lei Xiong, Fangrong Hu, Yuanjiang Xiang, **Xiaoyu Dai (通讯作者)**, Guangyuan Li. Ultrasensitive and tunable sensor based on plasmon-induced

transparency in a black phosphorus metasurface, **Plasmonics,** 16, 1071 (2021).

14. Chunyan Qiu, Shuaiwen Gan, Yuanjiang Xiang, **Xiaoyu Dai (通讯作者)**. High Figure of Merit in Lossy Mode Resonance Sensors with PtSe2 Thin Film, **Plasmonics,** 16, 729 (2021).
15. Yunlong Liao, Chunmei Song, Yuanjiang Xiang, **Xiaoyu Dai (通讯作者)**. Recent advances in spatial self‐phase modulation with 2D materials and its applications, **Annalen der physik,** 532, 2000322 (2020).
16. Yunlong Liao, Chunmei Song, Yuanjiang Xiang, **Xiaoyu Dai (通讯作者)**, Nonlinear absorption-induced transparency and extinction of boron nanosheets. **Optical Materials** 108, 110199 (2020).
17. Yanzhao Liang, Yuanjiang Xiang, **Xiaoyu Dai (通讯作者)**, Enhancement of graphene Faraday rotation in the one-dimensional topological photonic crystals. **Optics Express** 28(17), 24560-24567 (2020).
18. Shuaiwen Gan, Banxian Ruan, Yuanjiang Xiang, **Xiaoyu Dai (通讯作者)**, Highly sensitive surface plasmon resonance sensor modified with 2D Ti2C MXene for solution detection. **IEEE Sensors Journal**, 21, 347 (2021).
19. Yunlong Liao, Youxian Shan, Leiming Wu, Yuanjiang Xiang, **Xiaoyu Dai (通讯作者)**, Liquid‐Exfoliated Few‐Layer InSe Nanosheets for Broadband Nonlinear All‐Optical Applications. **Advanced Optical Materials** 8(9), 1901862 (2020).
20. Chunmei Song, Yunlong Liao, Yuanjiang Xiang, **Xiaoyu Dai (通讯作者),** Liquid phase exfoliated boron nanosheets for all-optical modulation and logic gates. **Science Bulletin,** 65(12), 1030-1038 (2020).
21. Yuting Zhao, Shuaiwen Gan, Leiming Wu, Jiaqi Zhu, Yuanjiang Xiang, Xiaoyu Dai (通讯作者), GeSe nanosheets modified surface plasmon resonance sensors for enhancing sensitivity. **Nanophotonics** 9(2), 327-336 (2020).
22. Jipeng Wu, Yanzhao Liang, Jun Guo, Leyong Jiang, **Xiaoyu Dai (通讯作者),** Yuanjiang Xiang, Tunable and Multichannel Terahertz Perfect Absorber Due to Tamm Plasmons with Topological Insulators. **Plasmonics** 15(1), 83-91 (2020).
23. Jiaqi Zhu, Yuxuan Ke, Jianfeng Dai, Qi You, Leiming Wu, Jianqing Li, Jun Guo, Yuanjiang Xiang, **Xiaoyu Dai (通讯作者)**, Topological insulator overlayer to enhance the sensitivity and detection limit of surface plasmon resonance sensor. **Nanophotonics** 9(7), 1941-1951 (2020).
24. Zhongfu Li, Banxian Ruan, Jiaqi Zhu, Jun Guo, Xiaoyu Dai (通讯作者), Yuanjiang Xiang, Tunable mid-infrared perfect absorber based on the critical coupling of graphene and black phosphorus nanoribbons. **Results in Physics** 15, 102677 (2019).
25. **Xiaoyu Dai,** Hao Chen, Chunyan Qiu, Leiming Wu, Yuanjiang

Xiang, Ultrasensitive Multiple Guided-Mode Biosensor With Few-Layer Black Phosphorus. **Journal of Lightwave Technology** 38(6), 1564-1571 (2019).

26. Youxian Shan, Zhongfu Li, Banxian Ruan, Jiaqi Zhu, Yuanjiang Xiang, **Xiaoyu Dai (通讯作者)**, Two-dimensional Bi_2S_3-based all-optical photonic devices with strong nonlinearity due to spatial self-phase modulation. **Nanophotonics** 8(12), 2225-2234 (2020).
27. Qi You, Zhongfu Li, Leyong Jiang, Jun Guo, **Xiaoyu Dai (通讯作者)**, Yuanjiang Xiang. Giant tunable Goos–Hänchen shifts based on surface plasmon resonance with Dirac semimetal films. **Journal of Physics D: Applied Physics** 53, 015107 (2019).
28. Yuting Zhao, Shuaiwen Gan, Guanghua Zhang, **Xiaoyu Dai (通讯作者),** High sensitivity refractive index sensor based on surface plasmon resonance with topological insulator. **Results in Physics** 14, 102477 (2019).
29. **Xiaoyu Dai**, Chunmei Song, Chunyan Qiu, Leiming Wu, Yuanjiang Xiang, Theoretical Investigation of Multilayer Ti_3C_2Tx MXene as the Plasmonic Material for Surface Plasmon Resonance Sensors in Near Infrared Region. **IEEE Sensors Journal** 19 (24), 11834-11838 (2019).
30. Yuting Zhao, Leiming Wu, Shuaiwen Gan, Banxian Ruan, Jiaqi Zhu, **Xiaoyu Dai (通讯作者)**, Yuanjiang Xiang. High Figure of Merit Lossy Mode Resonance Sensor with Graphene. **Plasmonics,** 14, 929-934 (2019).
31. Shuaiwen Gan, Haiqi Wang, Junwu Liang, **Xiaoyu Dai (通讯作者),** Yuanjiang Xiang, Ultra-sensitive refractive index sensors based on Bloch surface waves with transition metal dichalcogenides. **IEEE Sensors Journal,** 19(19), 8675-8680 (2019).
32. Leiming Wu, Jiaqi Zhu, Shuaiwen Gan, Qian Ma, **Xiaoyu Dai (通讯作者),** Yuanjiang Xiang. Application of Few-Layer Transition Metal Dichalcogenides to Detect the Refractive Index Variation in Lossy-Mode Resonance Sensors with High Figure of Merit. **IEEE Sensors Journal,** 19, 5030-5034 (2019).
33. **Xiaoyu Dai**, Y Liang, Y Zhao, S Gan, Y Jia, Y Xiang. Sensitivity Enhancement of a Surface Plasmon Resonance with Tin Selenide (SnSe) Allotropes. **Sensors** 19 (1), 173 (2019).
34. Banxian Ruan, Qi You, Jiaqi Zhu, Leiming Wu, Jun Guo, **Xiaoyu Dai (通讯作者),** and Yuanjiang Xiang. Fano resonance in double waveguides with graphene for ultrasensitive biosensor**. Optics Express** 26, 16884-16892 (2018).
35. Xi Wang, Qian Ma, Leiming Wu, Jun Guo, Shunbin Lu, **Xiaoyu Dai (通讯作者)**, and Yuanjiang Xiang, Tunable terahertz/infrared coherent perfect absorption in a monolayer black phosphorus. **Optics Express** 26, 5488-5496 (2018).
36. Xing Jiang, Qingkai Wang, Jun Guo, Jin Zhang, Shuqing Chen, **Xiaoyu Dai (通**

讯作者) and Yuanjiang Xiang. Resonant optical tunneling-induced enhancement of the photonic spin Hall effect. **Journal of Physics D: Applied Physics,** 51, 145104 (2018).

37. Qi You, Youxian Shan, Shuaiwen Gan, Yuting Zhao, **Xiaoyu Dai (通讯作者)**, and Yuanjiang Xiang. Giant and controllable Goos-Hänchen shifts based on surface plasmon resonance with graphene-MoS_2 heterostructure. **Optical Materials Express** 8, 3036-3048 (2018).
38. Xing Jiang, Qingkai Wang, Jun Guo, Shuqing Chen, **Xiaoyu Dai (通讯作者),** Yuanjiang Xiang. Enhanced Photonic Spin Hall Effect with a Bimetallic Film Surface Plasmon Resonance. **Plasmonics** 13, 1467-1473 (2018).
39. Banxian Ruan, Qi You, Jiaqi Zhu, Leiming Wu, Jun Guo, **Xiaoyu Dai (通讯作者)**, and Yuanjiang Xiang. Terahertz Biochemical Sensor Based on Strong Coupling Between Waveguide Mode and Surface Plasmons of Double-Layer Graphene. **IEEE Sensors Journal** 18, 7436 (2018).
40. L Wu, Q You, Y Shan, S Gan, Y Zhao, **Xiaoyu Dai (通讯作者)**, Y Xiang, Few-layer Ti3C2Tx MXene: a promising surface plasmon resonance biosensing material to enhance the sensitivity. **Sensors and Actuators B: Chemical** 277, 210-215 (2018).
41. Y Xiang, X Jiang, Q You, J Guo, **Xiaoyu Dai (通讯作者)**. Enhanced spin Hall effect of reflected light with guided-wave surface plasmon resonance. **Photonics Research** 5, 467-472 (2017).
42. **Xiaoyu Dai**, Leyong Jiang, and Yuanjiang Xiang, Tunable optical bistability of dielectric/nonlinear graphene/dielectric heterostructures. **Optics Express** 23(5), 6497-6508 (2015).
43. **Xiaoyu Dai,** Yuanjiang Xiang, and Leyong Jiang. Low threshold optical bistability at terahertz frequencies with graphene surface plasmons. **Scientific Reports** 5, 12271 (2015).
44. **Xiaoyu Dai**, Leyong Jiang, Yuanjiang Xiang. Tunable THz angular/frequency filters in the modified Kretschmann–Raether configuration with the insertion of single layer graphene. **IEEE Photonics Journal** 7, 5500808 (2015).

六、研究生培养情况

已培养研究生 15 名，其中博士研究生 3 名。目前指导在读研究生 2 名。

（2025 年 9 月更新）