偏微分方程数值计算团队

1. 团队简介

偏微分方程数值计算科研团队主要研究分数阶偏微分方程、积分微分方程、非线性偏微分方程、延迟微分方程、非局部理论、密度泛函理论、随机动力学、神经动力学等的数值方法。

目前团队主要成员有 7 人，其中副教授 1 人，特聘副教授 2 人，讲师 4 人，包括“广东省珠江人才计划引进高层次人才”1 人，校青年百人 A 类 3 人、B 类 3 人。团队先后在 SIAM Journal on Scientific Computing、Journal of Computational Physics、Journal of Scientific Computing、Applied Mathematics Letters、Journal of Computational and Applied Mathematics、Applied Numerical Mathematics、International Journal of Bifurcation and Chaos、Applied Mathematics and Computation、Computers and Mathematics with Applications 等期刊发表论文 60 余篇。

2. 团队负责人简介

汪志波，男，博士，副教授，硕士生导师，广东省珠江人才计划引进高层次人才，广东省青年科学家协会理事，广东省计算数学会理事，学校管理人文学部学术分委会委员兼秘书，《Mathematical Problems in Engineering》编委。主要从事偏微分方程数值解法等方面的研究。2016 年 1 月以“青年百人 A 类”人才计划引进，主持国家自然科学基金 2 项、广东省自然科学基金 2 项等 9 项科研项目，以第一或通讯作者发表 SCI 论文 30 余篇，其中 ESI 高被引论文 3 篇，论文总引用量近 700 次，H 指数 14，i10 指数 16。

3. 团队主要成员

姓名	学位	专业技术职务	研究方向
汪志波	博士	副教授	分数阶偏微分方程数值计算
房金伟	博士	讲师	非线性偏微分方程数值计算
詹锐	博士	讲师	延迟微分方程数值计算
孙亚辉	博士	特聘副教授	随机动力学

赵微	博士	讲师	非局部方程数值计算
况阳	博士	特聘副教授	密度泛函理论
汪净	博士	讲师	神经动力学

4. 团队承担的科研项目

项目名称	项目类别	执行期限	主持人
时间分数阶偏微分方程高效数值方法及其解的性质研究	国家自然科学基金青年项目	2018-2020	汪志波
分数阶Cattaneo方程高精度有限差分法的研究	国家自然科学基金天元项目	2017-2017	汪志波
时间分数阶偏微分方程高效数值方法研究	广东省自然科学基金	2017-2020	汪志波
基于非均匀网格技术的时间分数阶方程的高效数值方法研究	广东省自然科学基金	2019-2022	汪志波
时间分数阶 Fokker-Planck 方程的高效数值方法研究	广东省教育厅特色创新项目	2018-2019	汪志波
时间分数阶Klein-Gordon方程的高精度快速算法研究	广州市科技计划一般项目	2019-2022	汪志波
谱配置法中几类Birkhoff插值问题的收敛性分析	国家自然科学基金青年项目	2021-2023	房金伟
谱配置法中Birkhoff插值问题的收敛性和超收敛性分析	广州市科技计划一般项目	2022-2024	房金伟
Schrodinger-Poisson 方程的若干问题研究	国家自然科学基金青年项目	2013-2015	孙亚辉
多组分化学反应流的高效数值计算	广州市科技计划一般项目	2021-2023	赵微

5. 科研论文

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(3) **Z. Wang***, S. Vong, Compact difference schemes for the modified anomalous fractional subdiffusion equation and the fractional diffusion-wave equation, J. Comput. Phys. 277 (2014) 1-15.

(4) S. Vong, **Z. Wang***, A compact difference scheme for a two dimensional fractional Klein-Gordon equation with Neumann boundary conditions, J. Comput. Phys. 274 (2014) 268-282.

(5) **Z. Wang**, S. Vong*, A high-order exponential ADI scheme for two dimensional

time fractional convection-diffusion equations, Comput. Math. Appl. 68 (2014) 185-196.

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(8) S. Vong, **Z. Wang***, High order difference schemes for a time fractional differential equation with Neumann boundary conditions, East Asian J. Appl. Math. 4 (2014) 222-241.

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(20) L. Qiao, D. Xu, **Z. Wang***, An ADI difference scheme based on fractional trapezoidal rule for fractional integro-differential equation with a weakly singular kernel, Appl. Math. Comput. 354 (2019) 103-114.
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(24) L. Qiao, **Z. Wang***, D. Xu, An alternating direction implicit orthogonal spline collocation method for the two-dimensional multi-term time fractional integro-differential equation, Appl. Numer. Math. 151 (2020) 199-212.
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