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Publications

(Preprints:)

41. **M. Dai.** *Reduced models for electron magnetohydrodynamics: well-posedness and singularity formation.* arXiv:2204.01951, 2022.
40. **M. Dai.** *Almost sure well-posedness for Hall MHD.* arXiv:2202.04265, 2022.
39. **M. Dai.** *Almost sure existence of global weak solutions for supercritical electron MHD.* arXiv:2201.08161, 2022.
38. **A. Cheskidov and M. Dai.** *The number of degrees of freedom for the 2D Navier-Stokes equation: a connection with Kraichnan's theory of turbulence.* arXiv:2112.11606, 2021.
37. **M. Dai and S. Friedlander.** *Uniqueness and non-uniqueness results for dyadic MHD models.* arXiv:2107.04073, 2021.
36. **M. Dai, M. Hoeller, Q. Peng and X. Zhang.** *Kolmogorov's dissipation number and determining wavenumber for dyadic models.* arXiv:2108.12913, 2021.
35. **M. Dai, B. Vyas and X. Zhang.** *1D model for the 3D magnetohydrodynamics.* arXiv:2107.02920, 2021.
34. **M. Dai.** *Blow-up of dyadic MHD models with forward energy cascade.* arXiv:2102.03498, 2021.
33. **M. Dai and H. Liu.** *Anomalous dissipation of energy and magnetic helicity for the electron-MHD system.* arXiv:1911.03953, 2019.

(Peer Reviewed Articles:)

32. **M. Dai and S. Friedlander.** *Dyadic models for ideal MHD.* Journal of Mathematical Fluid Mechanics. DOI:10.1007/s00021-021-00640-9.
31. **M. Dai.** *Blow-up of a dyadic model with intermittency dependence for the Hall MHD.* Physica D: Nonlinear Phenomena. DOI: 10.1016/j.physd.2021.133066.
30. **M. Dai.** *Phenomenologies of intermittent Hall MHD turbulence.* DCDS-Series B. DOI: 10.3934/dcdsb.2021285.
29. **M. Dai and H. Liu.** *On well-posedness of generalized Hall-magnetohydrodynamics.* Zeitschrift für angewandte Mathematik und Physik. To appear.
28. **M. Dai, J. Krol and H. Liu.** *On uniqueness and helicity conservation of weak solutions to the electron-MHD system.* Journal of Mathematical Fluid Mechanics, 24:69, 2022.
27. **M. Dai.** *Non-uniqueness of weak solutions in Leray-Hopf space for the 3D Hall-MHD system.* SIAM Journal of Mathematical Analysis, 53(5): 5979–6016, 2021.
26. **M. Dai.** *Local well-posedness for the Hall-MHD system in optimal Sobolev spaces.* Journal of Differential Equations, Vol. 289: 159–181, 2021.
25. **A. Cheskidov and M. Dai.** *Discontinuity of weak solutions to the 3D NSE and MHD equations in critical and supercritical spaces.* Journal of Mathematical Analysis and Applications, Vol. 481 (2), 123493, 2020. https://doi.org/10.1016/j.jmaa.2019.123493.
24. **M. Dai and H. Liu.** *Low modes regularity criterion for a chemotaxis-Navier-Stokes system.* Communications on Pure and Applied Analysis, Vol. 19(5): 2713–2735, 2020. DOI: 10.3934/cpaa.2020118.

23. **M. Dai and H. Liu.** *Application of harmonic analysis techniques to regularity problems of dissipative equations.* Contemporary Mathematics, AMS, Vol. 748: 35–56, https://doi.org/10.1090/conm/748/15051, 2020.

22. **A. Cheskidov and M. Dai.** *On the determining wavenumber for the nonautonomous subcritical SQG equation.* Journal of Dynamics and Differential Equations. DOI: 10.1007/s10884-019-09794-7, 2019.

21. **A. Cheskidov and M. Dai.** *Regularity criteria for the 3D Navier-Stokes and MHD equations.* arXiv:1507.06611, 2015. To appear in Proceedings of the Edinburgh Mathematical Society.

20. **M. Dai and H. Liu.** *Long time behavior of solutions to the 3D Hall-magneto-hydrodynamics system with one diffusion.* Journal of Differential Equations, Vol. 266: 7658–7677, 2019.

19. **A. Cheskidov and M. Dai.** *Kolmogorov's dissipation number and the number of degrees of freedom for the 3D Navier-Stokes equations.* Proceedings of the Royal Society of Edinburg, Section A, Vol. 149, Issue 2: 429–446, 2019.

18. **A. Cheskidov, M. Dai and L. Kavlie.** *Determining modes for the 3D Navier-Stokes equations.* Physica D: Nonlinear Phenomena, Vol.374–375:1–9, 2018.

17. **M. Dai.** *Local well-posedness of the Hall-MHD system in $H^s(\mathbb{R}^n)$ with $s > \frac{n}{2}$.* Mathematische Nachrichten. DOI: 10.1002/mana.201800107, 2018.

16. **A. Cheskidov and M. Dai.** *Determining modes for the surface quasi-geostrophic equation.* Physica D: Nonlinear Phenomena, https://doi.org/10.1016/j.physd.2018.03.003.

15. **M. Dai.** *Regularity criterion and energy conservation for the supercritical quasi-geostrophic equation.* Journal of Mathematical Fluid Mechanics, DOI:10.1007/s00021-017-0320-y, 2017.

14. **M. Dai, E. Feireisl, E. Rocca, G. Schimperna, and M. E. Schonbek.** *Analysis of a diffuse interface model of multispecies tumor growth.* Nonlinearity, Vol. 30: 1639–1658, 2017.

13. **M. Dai.** *Regularity problem for the nematic LCD system with Q-tensor in $\mathbb{R}^3$.* SIAM Journal on Mathematical Analysis, Vol. 49(6): 5007–5030, 2017.

12. **J. Bona and M. Dai.** *Norm-inflation results for the BBM equation.* Journal of Mathematical Analysis and Applications, Vol. 446: 879–885, 2017.

11. **A. Cheskidov and M. Dai.** *The existence of a global attractor for the forced critical surface quasi-geostrophic equation in L^2.* Journal of Mathematical Fluid Mechanics, DOI: 10.1007/s00021-017-0324-7, 2017.

10. **M. Dai, E. Feireisl, E. Rocca, G. Schimperna, and M. E. Schonbek.** *On asymptotic isotropy for a hydrodynamic model of liquid crystals.* Asymptotic Analysis 97 (3-4): 189–210, 2016.

9. **M. Dai.** *Regularity criterion for the 3D Hall-magneto-hydrodynamics.* Journal of Differential Equations, 261: 573–591, 2016.

8. **M. Dai.** *Stability of solutions to the dissipative quasi-geostrophic equations.* Nonlinearity, 28: 4227–4248, 2015.

7. **A. Cheskidov and M. Dai.** *Norm inflation for generalized Magneto-hydrodynamic system.* Nonlinearity, 28: 129–142, 2015.

6. **M. Dai.** *Existence of regular solutions to an Ericksen-Leslie model of liquid crystal system.* Communications in Mathematical Sciences, Vol. 13 (7): 1711–1740, 2014.

5. **M. Dai and M. E. Schonbek.** *Asymptotic behavior of solutions to the liquid crystal systems in $H^m(\mathbb{R}^3)$.* SIAM Journal on Mathematical Analysis. Vol. 46, No. 5:3131–3150, 2014.

4. **A. Cheskidov and M. Dai.** *Norm inflation for generalized Navier-Stokes equations.* Indiana University Mathematics Journal, Vol. 63, No. 3 : 869–884, 2014.

3. **M. Dai, J. Qing and M. E. Schonbek.** *Asymptotic behavior of solutions to liquid crystal systems in $\mathbb{R}^3$.* Communications in Partial Differential Equations. Vol. 37, No. 12: 2138–2164, 2012.

2. **M. Dai, J. Qing and M. E. Schonbek.** *Regularity of solutions to the liquid crystals systems in $\mathbb{R}^2$ and $\mathbb{R}^3$.* Nonlinearity, 25: 513–532, 2012.

1. **M. Dai, J. Qing and M. E. Schonbek.** *Norm inflation for incompressible Magneto-hydrodynamic system in* $\dot{B}_{\infty}^{-1,\infty}$. Advances in Differential Equations, Vol. 16, No. 7-8: 725–746, 2011.