

List of Publications

Fist author publications

- [17] **Shalaby, M.**, **Thomas, T.**, Pfrommer, C., **Lemmerz, R.**, and **Bresci, V.**, “Deciphering the physical basis of the intermediate-scale instability”, *JPP letters in press*, [arXiv:2305.18050 \(2023\)](#).
- [16] **Shalaby, M.**, **Lemmerz, R.**, **Thomas, T.**, and Pfrommer, C., “The Mechanism of Efficient Electron Acceleration at Parallel Nonrelativistic Shocks”, *ApJ* **932.2**, 86 (2022).
- [15] **Shalaby, M.**, **Thomas, T.**, and Pfrommer, C., “A New Cosmic-Ray-driven Instability”, *ApJ* **908.2**, 206 (2021).
- [14] **Shalaby, M.**, Broderick, A. E., Chang, P., Pfrommer, C., Puchwein, E., and Lamberts, A., “The growth of the longitudinal beam-plasma instability in the presence of an inhomogeneous background”, *Journal of Plasma Physics* **86.2**, 535860201 (2020).
- [13] **Shalaby, M.**, Broderick, A. E., Chang, P., Pfrommer, C., Lamberts, A., and Puchwein, E., “Growth of Beam-Plasma Instabilities in the Presence of Background Inhomogeneity”, *ApJ* **859.1**, 45 (2018).
- [12] **Shalaby, M.**, Broderick, A. E., Chang, P., Pfrommer, C., Lamberts, A., and Puchwein, E., “Importance of Resolving the Spectral Support of Beam-plasma Instabilities in Simulations”, *ApJ* **848.2**, 81 (2017).
- [11] **Shalaby, M.**, Broderick, A. E., Chang, P., Pfrommer, C., Lamberts, A., and Puchwein, E., “SHARP: A Spatially Higher-order, Relativistic Particle-in-cell Code”, *ApJ* **841.1**, 52 (2017).
- [10] **Shalaby, M.**, “Dynamics and Light Propagation in a Universe with Discrete Matter Content”, *arXiv e-prints*, [arXiv:1205.6877 \(2012\)](#).

Publications with collaborators and students

- [9] **Lemmerz, R.**, **Shalaby, M.**, **Thomas, T.**, and Pfrommer, C., “Coupling multi-fluid dynamics equipped with Landau closures to the particle-in-cell method”, *JPP in press*, [arXiv:2301.04679 \(2023\)](#).
- [8] Lamberts, A., Puchwein, E., Pfrommer, C., Chang, P., **Shalaby, M.**, Broderick, A., Tiede, P., and Rudie, G., “Constraining blazar heating with the $2 \lesssim z \lesssim 3$ Lyman- α forest”, *MNRAS* **512.2** (2022).
- [7] Tiede, P., Broderick, A. E., **Shalaby, M.**, Pfrommer, C., Puchwein, E., Chang, P., and Lamberts, A., “Constraints on the Intergalactic Magnetic Field from Bow Ties in the Gamma-Ray Sky”, *ApJ* **892.2**, 123 (2020).
- [6] Broderick, A. E., Tiede, P., Chang, P., Lamberts, A., Pfrommer, C., Puchwein, E., **Shalaby, M.**, and Werhahn, M., “Missing Gamma-Ray Halos and the Need for New Physics in the Gamma-Ray Sky”, *ApJ* **868.2**, 87 (2018).
- [5] Tiede, P., Broderick, A. E., **Shalaby, M.**, Pfrommer, C., Puchwein, E., Chang, P., and Lamberts, A., “Bow Ties in the Sky. II. Searching for Gamma-Ray Halos in the Fermi Sky Using Anisotropy”, *ApJ* **850.2**, 157 (2017).
- [4] Broderick, A. E., Tiede, P., **Shalaby, M.**, Pfrommer, C., Puchwein, E., Chang, P., and Lamberts, A., “Bow Ties in the Sky. I: The Angular Structure of Inverse Compton Gamma-Ray Halos in the Fermi Sky”, *ApJ* **832.2**, 109 (2016).
- [3] Chang, P., Broderick, A. E., Pfrommer, C., Puchwein, E., Lamberts, A., **Shalaby, M.**, and Vasil, G., “The Linear Instability of Dilute Ultrarelativistic e^\pm Pair Beams”, *ApJ* **833.1**, 118 (2016).
- [2] Lamberts, A., Chang, P., Pfrommer, C., Puchwein, E., Broderick, A. E., and **Shalaby, M.**, “Patchy Blazar Heating: Diversifying the Thermal History of the Intergalactic Medium”, *ApJ* **811.1**, 19 (2015).
- [1] Chang, P., Broderick, A. E., Pfrommer, C., Puchwein, E., Lamberts, A., and **Shalaby, M.**, “The Effect of Nonlinear Landau Damping on Ultrarelativistic Beam Plasma Instabilities”, *ApJ* **797.2**, 110 (2014).