Nouhaila
Bouhadi
University Chouaïb Doukkali, Faculty of Science El Jadida
Poster

Space weather forecasting plays a critical role in safeguarding Earth's infrastructure against the adverse effects of solar activity, such as solar flares and coronal mass ejections. This research leverages hybrid optimization techniques, combining Physics-Informed Neural Networks (PINNs) and Explainable AI (XAI), to enhance the prediction accuracy of solar-terrestrial interactions. By integrating physical laws with data-driven models, the study ensures both computational efficiency and physical consistency.

This contribution highlights the development and application of a robust framework for space weather parameter prediction, using advanced machine learning techniques. Initial results demonstrate improved accuracy over traditional models, offering actionable insights for heliophysics research and operational forecasting. This project bridges astronomy with computational science, illustrating how interdisciplinary approaches can advance Africa's contribution to global astronomy research.

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