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"Solar Prominences: Stability, Magnetohydrodynamics, and Seismology"





"Solar Prominences: Stability, Magnetohydrodynamics, and Seismology"

Fact Sheet

Project Information		
SOLPROM-SMS		Funded under Specific programme "People" implementing the
Grant agreement ID: 274716		Seventh Framework Programme of the European Community for research, technological
Project closed		development and demonstration activities (2007 to 2013)
Start date 1 June 2011	End date 31 May 2013	Total cost€ 157 100,00EU contribution€ 157 100,00Coordinated by KATHOLIEKE UNIVERSITEIT LEUVEN■ Belgium

This project is featured in...



Objective

"The solar corona is a natural laboratory to study the behavior and properties of plasmas under conditions that cannot be realized in a laboratory on Earth. Understanding the plasma behaviour in the solar atmosphere is a necessary prerequisite for our understanding of plasma behaviour in the atmospheres of other stars and space weather. The focus in this proposal is on Solar Prominences, spectacular large-scale magnetic structures of the solar corona. Very recent observations have reported on exciting prominence dynamics with unprecedented temporal and spatial resolution as, e.g. oscillations, waves, flows, and instabilities in the fine structure of prominences (threads). Thread oscillations have been interpreted as magnetohydrodynamic (MHD) waves. Flows may drive Kelvin-Helmholtz instabilities (KHI) and resonant flow instabilities (RFI), while the fine structure may be thermally unstable. Despite the timeliness and relevance of the observations, these phenomena are not well-understood. The present research project aims to investigate oscillatory dynamics and stability of prominence threads from a theoretical point of view. This proposal is organized into two sub-projects. The main goals of sub-project A will be to study MHD wave properties in prominence threads. The combination of our theoretical results with the observations will allow us to apply the technique of MHD seismology to indirectly infer the values of relevant physical parameters of the prominence plasma. In sub-project B, we will focus on prominence plasma instabilities. We will study thermal instability of threads and both KHI and RFI driven by shear flows. Throughout this investigation, we will make use of analytical methods in combination with advanced numerical simulations. The research results of this project will be a breakthrough for our knowledge of the physics of solar prominences, and this proposal will strongly promote the applicant's career development within the European Research Area"

Fields of science (EuroSciVoc) 3

natural sciences > physical sciences > astronomy > galactic astronomy > solar physics

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Programme(s)

<u>FP7-PEOPLE - Specific programme "People" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)</u>

Topic(s)

FP7-PEOPLE-2010-IEF - Marie-Curie Action: "Intra-European fellowships for career development"

Call for proposal

FP7-PEOPLE-2010-IEF See other projects for this call

Funding Scheme

MC-IEF - Intra-European Fellowships (IEF)

Coordinator

KATHOLIEKE UNIVERSITEIT LEUVEN

EU contribution

€ 157 100,00

Total cost

No data

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Region

Vlaams Gewest > Prov. Vlaams-Brabant > Arr. Leuven

Activity type

Higher or Secondary Education Establishments

Links

Contact the organisation C Website C Participation in EU R&I programmes C HORIZON collaboration network

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European Union, 2025