"Citizen CATE: Creating an Hour Long Movie of the Middle Corona during the 2024 Total Solar Eclipse"

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Abstract

Modern imaging techniques have improved our ability to study the solar corona. However, the region responsible for heating the corona to temperatures that are orders of magnitude higher than the solar surface is still challenging to observe. This region, the middle corona, becomes far easier to study using the natural coronagraph provided by the moon during a total solar eclipse. With funding from NSF, the Southwest Research Institute has assembled 35 teams to be positioned along the path of totality from Texas to Maine for the 2024 total solar eclipse. By collecting data for the duration of totality, we will create an hour long movie of the solar corona, giving us an unprecedented look at the processes that heat it. The equipment provided will also allow for a unique study of the corona's magnetic field geometry and provide insight into the process of magnetic reconnection. Since this is a citizen science project, all of the equipment will be given to the local teams taking the data in order to contribute to the education of their respective communities.