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## Transient small-scale brightenings in the quiet solar corona: a model for campfires observed with Solar Orbiter

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Recent observations by the Extreme Ultraviolet Imager (EUI) on board Solar Orbiter have revealed prevalent small-scale transient brightenings in the quiet solar corona termed “campfires”. To understand the generation mechanism of these coronal brightenings, we constructed a self-consistent and time-dependent quiet-Sun model extending from the upper convection zone to the lower corona using a realistic three-dimensional radiation magnetohydrodynamic simulation. From the model we have synthesized the coronal emission in the EUI 174 passband. We identified several transient coronal brightenings similar to those in EUI observations. The size and lifetime of these coronal brightenings are mostly 0.5-4 Mm and ~2 min, respectively. These brightenings are generally located at a height of 2-4 Mm above the photosphere, and the local plasma is often heated above 1 MK. By examining the magnetic field structures before and after the occurrence of brightenings, we concluded that these coronal brightenings are generated by component magnetic reconnection between interacting bundles of magnetic field lines or neighboring field lines within highly twisted flux ropes. Occurring in the coronal part of the atmosphere, these events generally reveal no obvious signature of flux emergence or cancellation in photospheric magnetograms. These transient coronal brightenings may play an important role in heating of the local coronal plasma.

### Student poster?

**Primary authors:** CHEN, Yajie (Peking University); PRZYBYLSKI, Damien (Max-Planck Institute for Solar System Research, 37077 Göttingen, Germany); PETER, Hardi (Max Planck Institute for Solar System Research, Göttingen, Germany); TIAN, Hui (Peking University); AUCHÈRE, Frédéric (Université Paris-Saclay, CNRS, Institut d’Astrophysique Spatiale, 91405 Orsay, France); BERGHMANS, David (Royal Observatory of Belgium)

**Presenter:** CHEN, Yajie (Peking University)

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