

## **Solar and stellar flares - recent advances and open questions**

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Eruptions on the Sun and stars, called flares, are capable of releasing energies exceeding  $10^{32}$  erg within minutes. Particles accelerated during solar flares can affect Earth in various ways and for example cause enhanced radiation, power blackouts, or aurorae.

The standard flare model postulates that energy stored in the solar magnetic field is impulsively released during the process of reconnection, when magnetic field lines are rearranged. During this process, particles are accelerated both towards the solar surface and towards space. Yet so far nobody knows when the next flare will occur. Stellar flares can even be thousands of times stronger than solar flares, but their mechanisms are yet unclear.

In this talk I will review our current state of research on flares, including how well current machine learning models perform when trying to predict flares, and show some important questions that remain to be answered in our future research.