From microflares to strong and long-duration flares

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The analysis of high resolution optical spectroscopic observations of different kinds of late-type stars indicates that chromospheric flare phenomena in these stars take place at very different scales that in the solar case. Evidences of chromospheric microflaring activity have been found in the broad wings detected in the excess Hα emission profiles of very active chromospherically active binary systems and weak-lined T Tauri stars (WTTS). High and moderate-energy, but low frequency flares have been detected in young, single and rapid-rotators K dwarfs such as LQ Hya and PW And. Strong (several orders of magnitud larger than in the Sun) and long-duration (several days) flares have been found in chromospherically active binaries like V711 Tau and 2RE J0743+224. Moreover, when we carefully analyse high-temporal (15 s) resolution spectroscopic observations of typical flare stars (UV Cet type) we find very frequent low amplitude flare-like events in addition to the typical flares. These large ranges of energy and frequency in the flares detected in late-type stars point out the strong influence of stellar properties as temperature, rotation rate, age, and binarity on the magnetic reconnection process that originates flares.