ENERGETICS AND MAGNETIC RECONNECTION FOR SOLAR CHROMOSPHERIC MICROFLARES

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Solar chromospheric microflares (MFs) are important one of the small-scale activities in the solar chromosphere. Recent semi-empirical models indicate that for MFs there is a temperature enhancement of about 2000-2500 K in the chromosphere. The total energy of MFs is about $10^{27}$ to $5 \times 10^{28}$ ergs. Some evidence implies that magnetic reconnection in the chromosphere may be responsible for the MFs. Considering radiative losses and gravity, we have performed 2.5D MHD simulations in the chromosphere. Our results show that with the combination of different parameters, including the magnetic field, the height of reconnection and the anomalous resistivity etc., the semi-empirical temperature distributions for MFs can be well reproduced. Moreover, we found a scaling law, which is described as $\Delta T/\Delta t \sim n_H^{-1.5} B^{2.3} \eta_0^{0.94}$. It can be understood by considering the energy balance during the magnetic reconnection.