

Estimating the temperature

The temperature of a solar spot or a facula can be estimated from an intensity profile.

Theory

The Stefan-Boltzmann law gives a correlation between emitted radiative power P of a black body, the emitting area A , and its absolute temperature T :

$$\begin{aligned} P = \sigma A \cdot T^4 \end{aligned}$$

For details, see the relevant literature or [Wikipedia](#).

Application

To determine the temperature by the Stefan-Boltzmann law, compare two radiative powers P_1 and P_2 :

$$\frac{P_1}{P_2} = \frac{T_1^4}{T_2^4}$$

As proxy of the radiative power one can use the measured count number ([see here](#)).

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