

# 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  $T$ :

$$P = \sigma \cdot A \cdot T^4$$

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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Last update: **2016/05/22 18:09**

