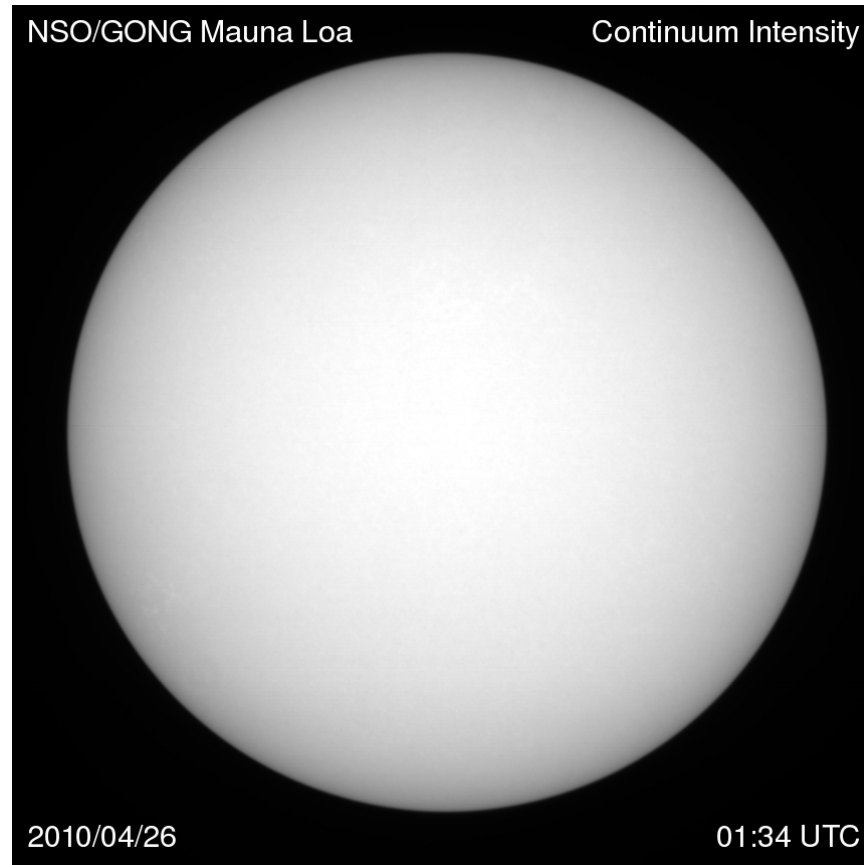


Let's begin exploring the Sun as a solar system object



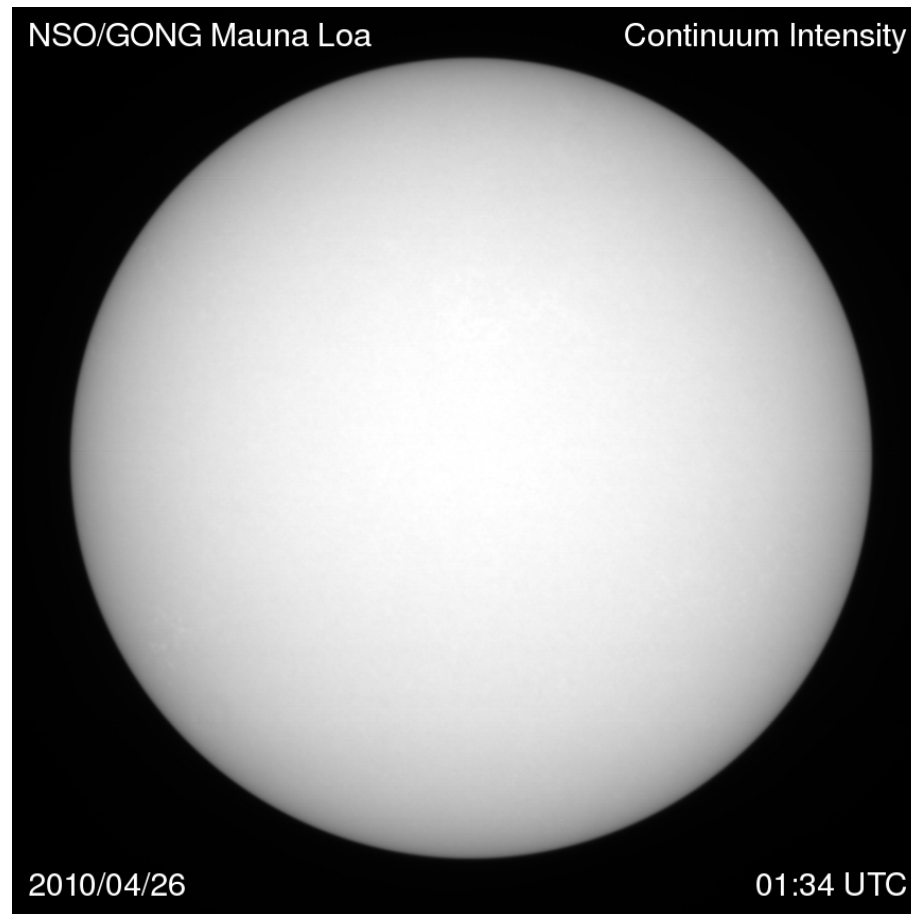
What we see as the disk of the Sun is a layer in its atmosphere called the **photosphere**

The Sun is a beautiful illustration of Wien's Law



The solar spectrum is a good match (although not perfect) to a blackbody spectrum

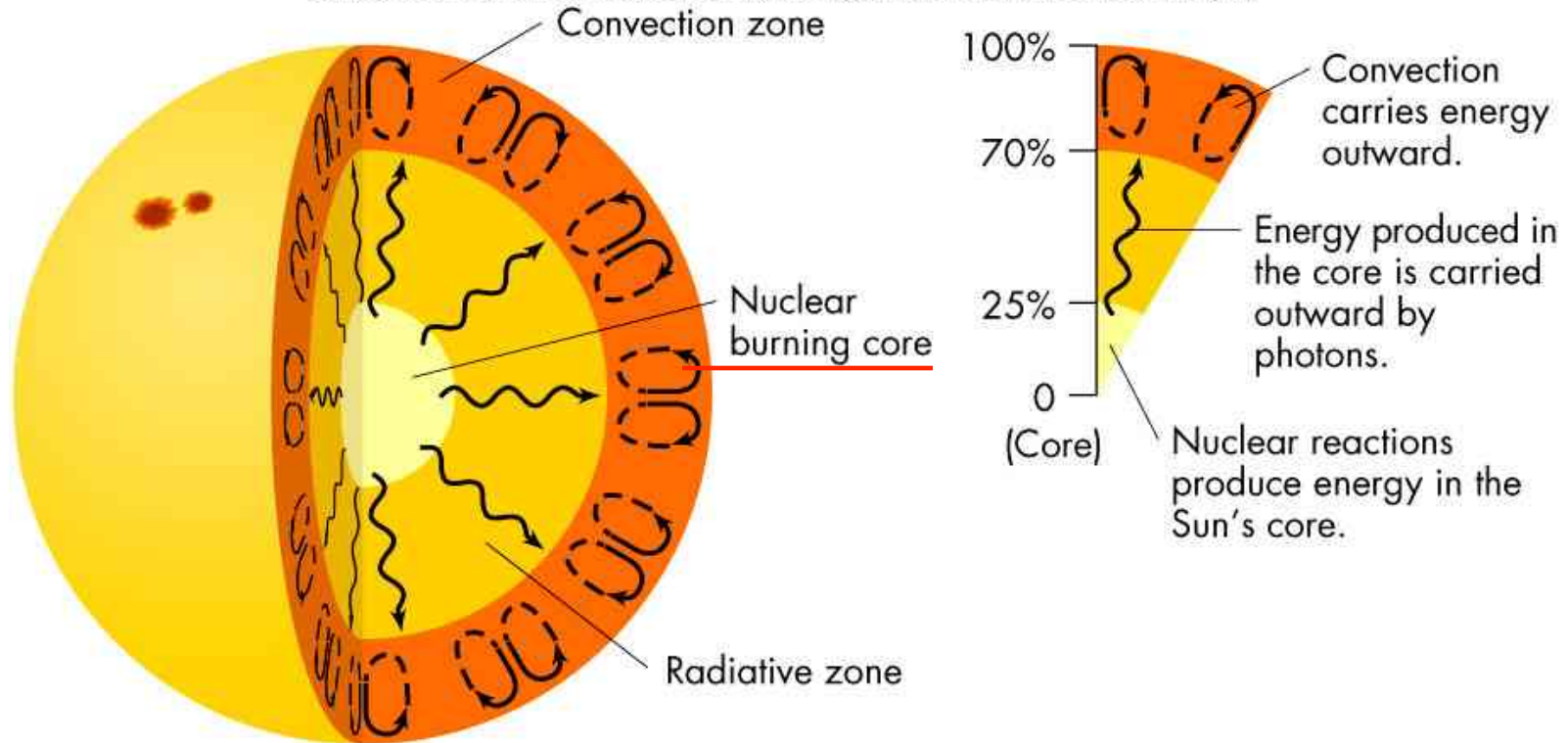
Let's take a closer look at the solar photosphere...it isn't as featureless as it seems



It is particularly interesting if you look in the light of the hydrogen alpha line (656 nanometers)

Why does the Sun shine?

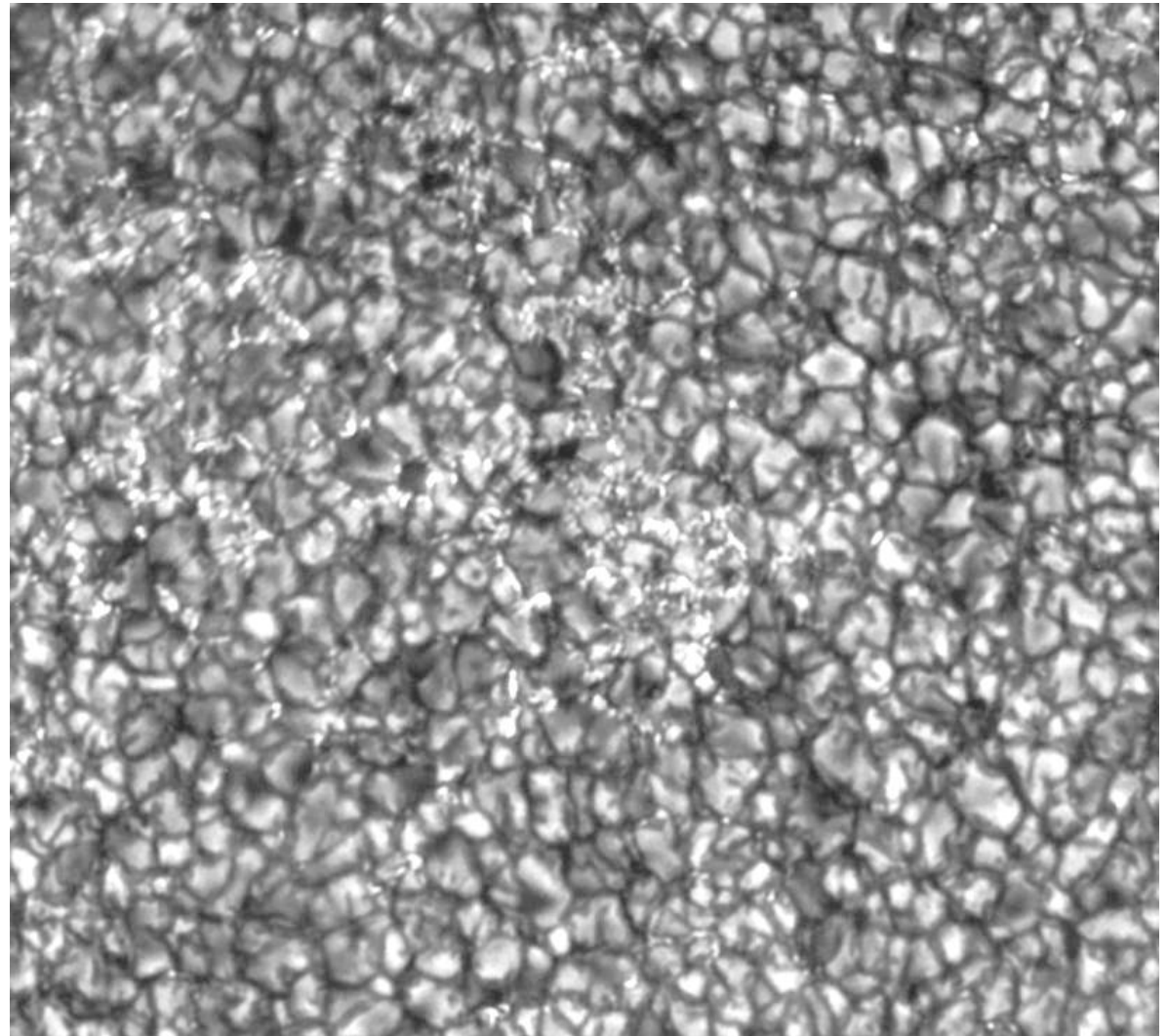
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Luminosity (or power output) of $3.85E26$
Watts

Granules in the Solar Atmosphere

Granules are convection cells; the outer layer of the Sun is carrying heat by “boiling”



30 40 50 60
Photospheric granulation, G. Scharmer
Swedish Vacuum Solar Telescope
10 July 1997
Distance in units of
1000 kilometers

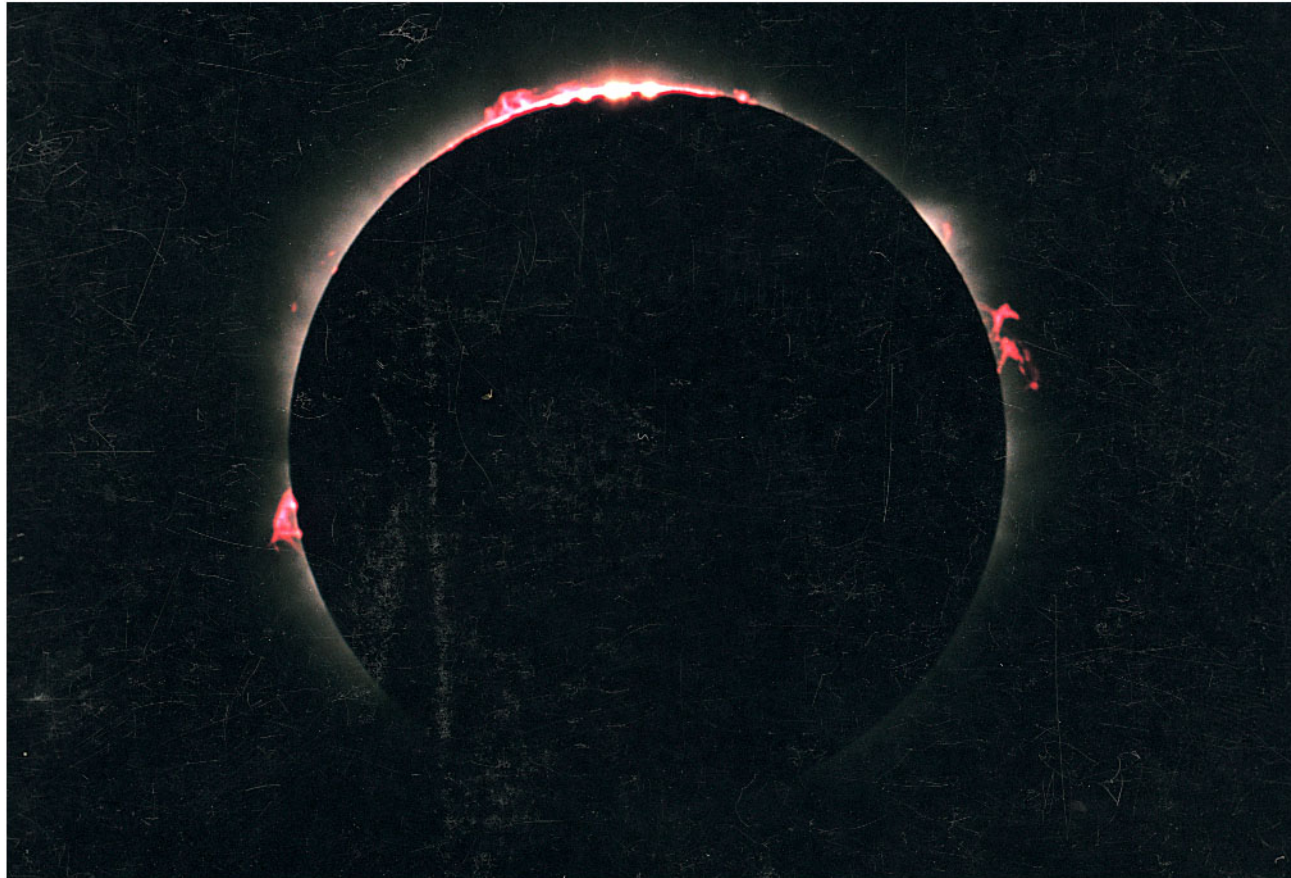
The physics of convection is common in nature as a way of moving heat from one place to another



demo

The Chromosphere-region above the photosphere, and substantially hotter

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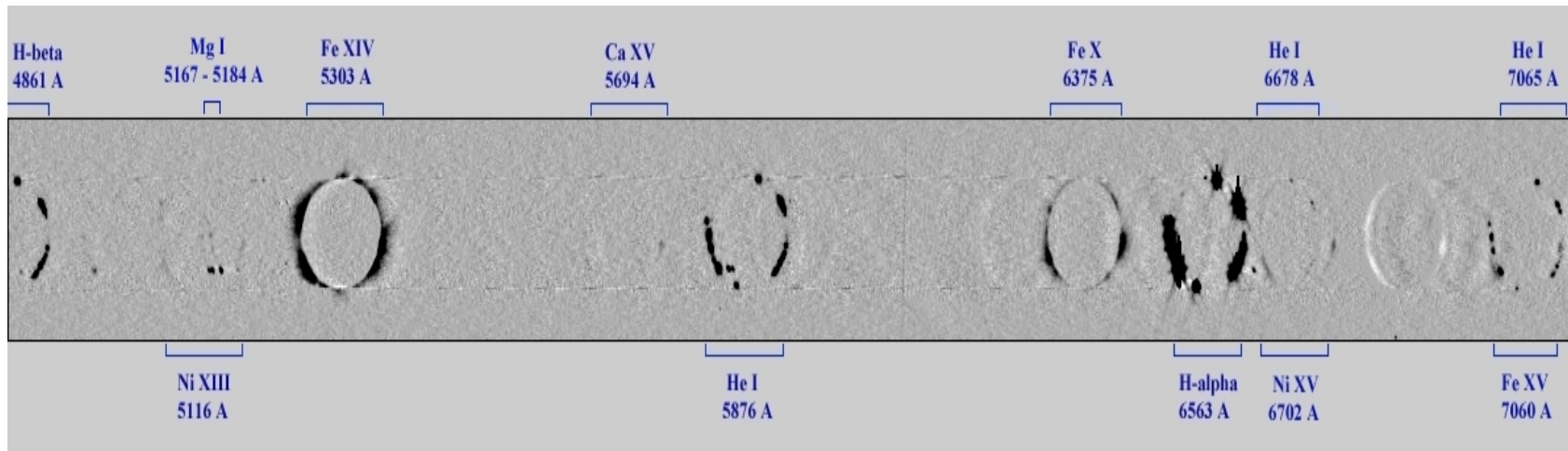


The Solar Corona

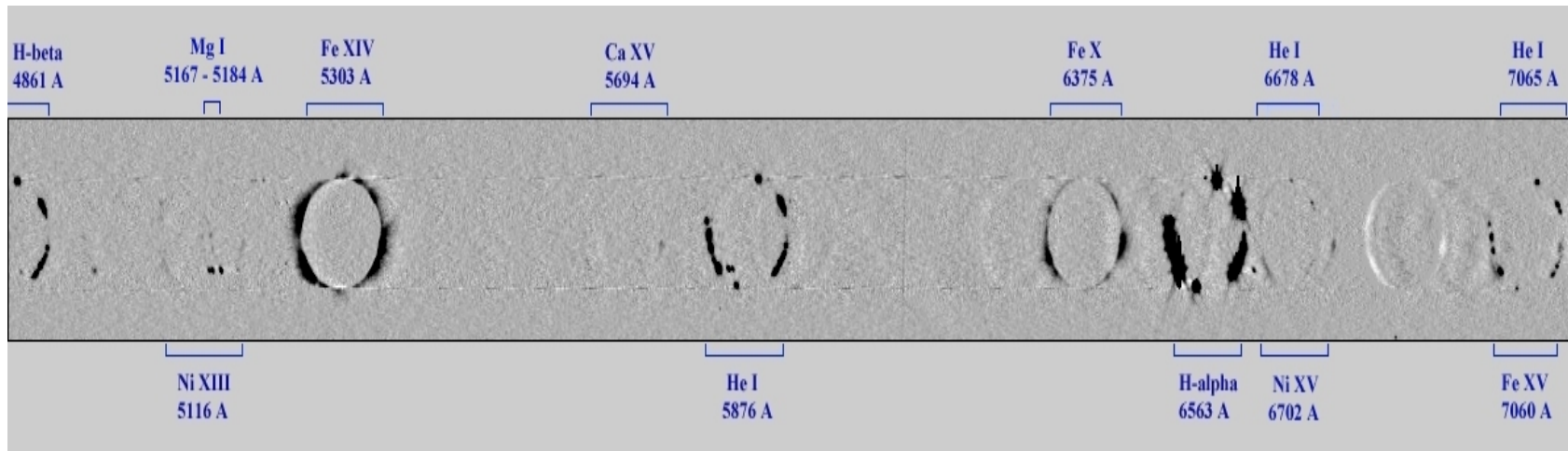


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A clue to the nature of the corona: the red and green emission lines



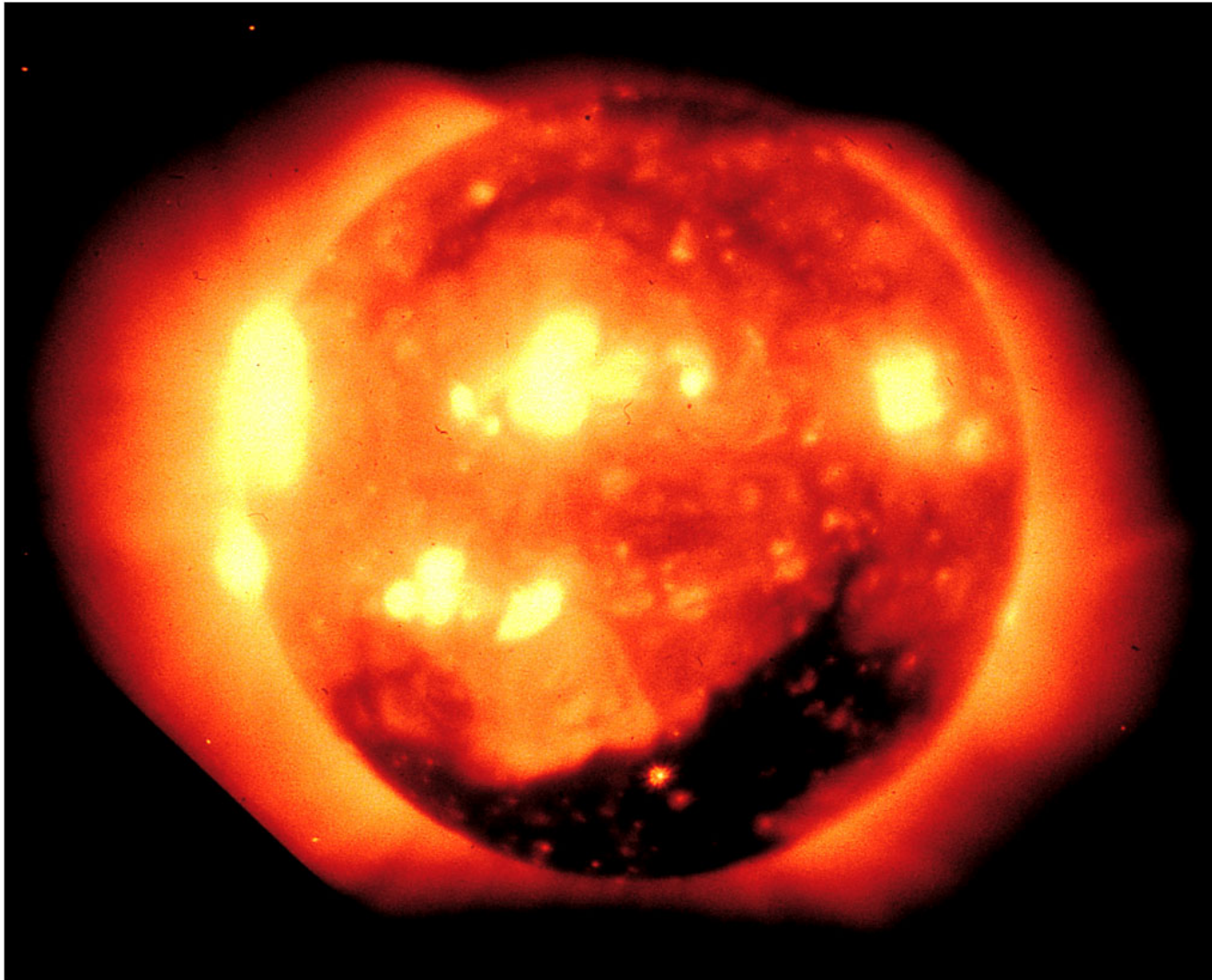
A clue to the nature of the corona: the red and green emission lines



Emission lines of FeX and FeXIV

The X-Ray Sun

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The Temperature Profile in the Solar Atmosphere

