

THE SOLAR CHEMICAL COMPOSITION: PAST and PRESENT

Monday 11 June 2018 11:00 (30 minutes)

We shall briefly recall what we knew 50 years ago concerning the solar chemical composition. Solar abundances at that time were sometimes called “cosmic abundances” as they were thought to apply to all astronomical objects!

We shall then discuss the present solar chemical composition derived from the photospheric spectrum thanks to the use of 3D photospheric models, with non-LTE, using all the indicators, atoms and molecules. These new results will be compared with older results and we will show why the new abundances of the most abundant elements (O, C, ...) are lower than the old values. The present solar abundances will also be compared with other sources of data like spectroscopic measurements of the corona, observations of solar particles from the two solar wind regimes, solar energetic particles as well as meteorites. Some of the data from these outer solar sources are especially important to derive the solar abundance of Neon!

We shall finally very briefly mention the impact of the new solar chemical composition on the solar models (details will be given in other talks) i.e. what was first called “the solar abundance problem”, then modified to “the solar modelling problem”. And finally why not again modified to “the solar opacity problem”! Who knows?

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