

**Title: Measuring the ionization rate of in-flowing interstellar helium with the SOHO/CELIAS/SEM**

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Publication: In: Proceedings of the SOHO 11 Symposium on From Solar Min to Max: Half a Solar Cycle with SOHO, 11-15 March 2002, Davos, Switzerland. A symposium dedicated to Roger M. Bonnet. Edited by A. Wilson, ESA SP-508, Noordwijk: ESA Publications Division, ISBN 92-9092-818-2, 2002, p. 489 - 491

Publication Date: 06/2002

Origin: ARI

Keywords: Interstellar Helium, Interplanetary Space

Abstract Copyright: ESA

Comment: ISBN: 92-9092-818-2

Bibliographic Code: 2002ESASP.508..489M

### **Abstract**

The absolute measurement of solar EUV flux and its time dependence provide critical data on the solar driven photochemistry which results in solar system objects. In addition, the SEM measurements also provide the data required to determine the absolute photoionization rate of neutral interstellar helium flowing into our solar system. After hydrogen, helium is the most abundant substance found in interplanetary space, and the interstellar medium. In the inner solar system photoionization of helium is the dominant ionization process of the inflowing interstellar neutral helium. Thus, an accurate determination of the solar photoionization rate is a requirement in astrophysical research. The daily averaged photoionization rate of helium at 1 AU, derived from the SOHO CELIAS/SEM absolute solar extreme ultraviolet (EUV) flux values is presented for the time period since the launch of SOHO in December, 1995.