

Abstract Submitted
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Astrobiological Effects of Stellar Radiation in Circumstellar Environments¹ MANFRED CUNTZ, LEVENT GURDEMIR, Department of Physics, University of Texas at Arlington, EDWARD F. GUINAN, Department of Astronomy and Astrophysics, Villanova University, ROBERT L. KURUCZ, Harvard-Smithsonian Center for Astrophysics — The centerpiece of all life on Earth is carbon-based biochemistry. Previous scientific research has suggested that biochemistry based on carbon may also play a decisive role in extraterrestrial life forms, i.e., alien life outside of Earth, if existent. In the following, we explore if carbon-based macromolecules (such as DNA) in the environments of stars other than the Sun are able to survive the effects of energetic stellar radiation, such as UV-C in the wavelength band between 200 and 290 nm. We focus on main-sequence stars akin to the Sun, but of hotter (F-type stars) and cooler (K- and M-type stars) surface temperature. Emphasis is placed on investigating the radiative environment in stellar habitable zones (HZs). Stellar habitable zones have an important relevance in astrobiology because they constitute circumstellar regions in which a planet of suitable size can have surface temperatures for water to exist in liquid form.

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