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SPECTRAL ANALYSIS OF THE CME OCCURRENCE SERIES

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In order to investigate Coronal Mass Ejections (CMEs) in terms of either its pattern of occurrence or periodicities a new combination of techniques has been applied. It consists in the selection of a CMEs onset time continuous series obtained from the CDAW catalog for the years 2000-2012, covering a full cycle interval. The analysis has been made by a combination of: series spectral decomposition, periodic known components removal, and wavelet spectrum (WS) of the residual series. Spectral components are searched within the 95% confidence level. Application of WS becomes possible the identification of any component, and how long as well as when it is present in the series. Known periodic components identified in this and other studies are: 11-year, 6-year, 2.8-year, 1-year. Also, a 27-day component is well known. After removal of all known components, this investigation permitted us to identify a new component within the range of 16-64 days in the CMEs occurrence series. Beyond 64 days no component is observed. Identified component is intermittent in nature mainly from maximum up to the minimum of the 23rd solar cycle which corresponds to the interval 2000-2007. Then, it practically disappears till 2011 and 2012 when show up again. It has to be emphasized that the 16-64 days component became persistent in the interval 2006-2007. Interpretation of these is under preparation and will be published somewhere else.

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A NEW LIBRARY OF THEORETICAL STELLAR SPECTRA FOR STELLAR POPULATION APPLICATIONS

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Libraries of stellar spectra are one of the main ingredients of stellar population synthesis models. Theoretical libraries have been increasingly used in recent years to overcome limitations of empirical libraries, in particular to explore parameter space (in temperatures, metalicities and abundance patterns) not well covered by empirical libraries. In this talk, a new theoretical stellar library is presented. It consists of high and low-resolution spectra which cover the parameter space required to the modelling of stellar populations between 30 Myr and 14 Gyr, metalicities Z between 0.0017 and 0.0048, at both solar-scaled and α-enhanced compositions. The characteristics of the library as well as comparisons to observations will be presented.

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THE VVV TEMPLATES PROJECT

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Until now, stellar variability in the near-IR has been a relatively ill-explored research field. In particular, the number of high-quality light curves is very limited and, even worse, many variability classes have not yet been observed in a sufficiently extensive way in the near-IR, so that good light curves are entirely lacking for some such classes. Since VVV is the first ever large survey dedicated to stellar variability in the near-infrared, the first problem we had to face has thus been the construction of a proper statistically significant database of high-quality (i.e., template) near-IR light curves for a significant sample of stars taken to be representative of the different variability classes under study. The main purpose of the VVV Templates Project is thus to build a large database of well-defined, high-quality, near-IR light curves for variable stars of different types, which will form the basis of the VVV automated classification algorithms

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EXTENSIVE MULTICONFIGURATION CALCULATIONS OF OSCILLATOR