

# Detection of a weak magnetic field in the pulsating Be star $\beta$ Cephei

H.F. Henrichs<sup>a</sup>, J.A. de Jong<sup>a</sup>, J.-F. Donati<sup>b</sup>, G.A. Wade<sup>c</sup>, J. Babel<sup>d</sup>, S.L.S. Shorlin<sup>e</sup>,  
E. Verdugo<sup>f</sup>, A. Talavera<sup>g</sup>, C. Catala<sup>b</sup>, P.M. Veen<sup>h</sup>, J.S. Nichols<sup>i</sup>, L. Kaper<sup>a</sup>

<sup>a</sup> Astronomical Institute 'Anton Pannekoek', University of Amsterdam, Kruislaan 403, 1098SJ Amsterdam, Netherlands

<sup>b</sup> Observatoire Midi-Pyrenees, 14 Avenue Edouard Belin, 31400 Toulouse, France

<sup>c</sup> Department of Astronomy, University of Toronto at Mississauga, Mississauga, Ontario, Canada L5L 1C6

<sup>d</sup> 36 rue des Battieux, 2000 Neuchatel, Switzerland

<sup>e</sup> Department of Physics and Astronomy, The University of Western Ontario, Canada N6A 3K7

<sup>f</sup> ISO Data Centre, P.O.B 50727, B-28080 Madrid, Spain

<sup>g</sup> LAEFF/INTA, RO.B 50727, E-28080 Madrid, Spain

<sup>h</sup> Sterrewacht Leiden, Huygens Laboratorium, Postbus 9504, 2300 RA, Leiden, Netherlands

<sup>i</sup> Harvard/Smithsonian Center for Astrophysics, 60 Garden Str., Cambridge, MA 02138, U.S.A.

Abstract.

We report the detection, using the MuSiCoS spectropolarimeter, of a weak ( $\sim 200$  G peak-to-peak) longitudinal magnetic field in the pulsating Be star  $\beta$  Cep. We discuss the field variability and surface geometry, the phasing relative to the UV wind line variations, and preliminary results attempting to model the magnetosphere of this object. This is only the second direct detection of a magnetic field in a non-chemically peculiar early-type star.

**Key words:** magnetic fields - Be stars - He-peculiar stars