Part 2. The Status of Stellar Variability
Section 2A. Pulsating Stars

Overview of Stellar Pulsations and Driving Mechanisms in Relation to the Evolution of Stars *(Abstract)*

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Abstract An overview of pulsations and instabilities throughout the HR diagram will be presented in relation to a description of the main phases of stellar evolution. The various groups of variable stars will be discussed as well as their properties.

We shall also examine the basic physics of stellar pulsations, with a particular emphasis on the driving mechanisms. These mechanisms are essentially effects due to stellar opacity and radiation pressure. Radiation also plays a major role in producing stellar winds and the many consequences of these winds on the evolution will be illustrated.

Pulsating B Stars Discovered by HIPPARCOS *(Abstract)*

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The follow-up data were performed with the Swiss Telescope of the Geneva Observatory and with ESO's CAT telescope, both at La Silla, Chile

Abstract We present a classification of 267 new variable B-type stars discovered by HIPPARCOS, which results in, among others, a huge number of new Slowly Pulsating B stars and several supergiants with α Cyg-type variations. Our results

clearly point out the bias towards short-period variables of earlier, ground-based surveys of variable stars.

The position of the new β Cephei stars and Slowly Pulsating B stars in the HR diagram is compared with the most recent calculations of the instability strips. The new Slowly Pulsating B stars almost fully cover the theoretical instability domain. The supergiants with α Cyg-type variations are situated between the β Cephei stars and the Slowly Pulsating B star, on the one hand, and previously known supergiants that exhibit micro-variations on the other hand.

Finally, we introduce the follow-up study of the most interesting targets that we started in 1996 and that is still ongoing.

Stellar Variability in the Lower Part of the Classical Instability Strip *(Abstract)*

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Abstract The photometric properties of the variable stars located in the lower part of the classical instability strip are discussed. The importance of the determination of some light curve parameters and their connection with the stellar models are stressed, with a particular emphasis on large amplitude δ Scuti stars.

CCD Light Curves for Unstudied RR Lyrae Variables in the Core of M5 *(Abstract)*

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Abstract We present an investigation of the variable star population in the core of globular cluster M5, which allowed us to construct light curves for 26 poorly-investigated (or not investigated at all) RR Lyrae stars.

New CCD Photometry of RR Lyrae Stars in NGC 3201 *(Abstract)*

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Abstract *BVI* photometry is presented for RR Lyrae variables belonging to the Oosterhoff I globular cluster NGC 3201. We provide new and accurate light curves for more than fifty variables that will allow scientists to study the instability strip morphology in some detail.

A High-Speed Photometric Survey of Normal and Peculiar A-Type Stars *(Abstract)*

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Abstract A long-term, high-speed photometric survey of about two hundred normal and peculiar A-type stars using a 125-cm RC telescope equipped with a Two-Star Photometer is presented.

New Insights Into the S Doradus Phenomenon and the Micro-Variations of Eight Luminous Blue Variables *(Abstract)*

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Abstract Here we investigate the photometric histories of the luminous blue variables (LBVs) η, AG, and HR Car within our Galaxy, S Dor, R127, R110, and R71 in the LMC, and R40 in the SMC by collecting all available photometry.

Comparison of Visual and Photoelectric Photometry for Bright Cepheids *(Abstract)*

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Abstract Galactic Cepheid variables have been studied both visually and photoelectrically for decades. While photoelectric data are generally of high precision, they are literally few and far between. Visual data are of lower precision, but for many stars we have great quantities of data over a very long time span, from which we gain useful information about their amplitudes, and can determine periods with startling precision, enabling very detailed study of the stability of Cepheid periods.

*deceased January 31, 2003

Linear Polarimetric Variations of RV Tauri Stars *(Abstract)*

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Abstract We have been making multicolor linear polarimetric observations of RV Tauri stars with the 91-cm reflector at the Dodaira Station of the National Astronomical Observatory (NAO). We report the results for nineteen RV Tauri stars.