

## The 2-meter telescope of the

National Astronomical Observatory - Rozhen

Institute of Astronomy

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- 1. Who we are and where we are?
- 2. The 2-meter telescope main characteristics and observational modi, examples
- 3. Recent upgrades, illustrations
- 4. Future plans, dreams
- 5. Education and outreach
- 6. International co-operation

#### Who we are?

Institute of Astronomy National Astronomical Observatory - Rozhen Staff: 79 permanent positions, 35 scientific members **Research topics:** •Sun Chemically peculiar stars Solar System Stellar clusters Nonstationary stars •Galaxies Stellar atmospheres and •Wide field plate data base envelopes



#### National Astronomical Observatory - Rozhen Where we are?

Пловди

NAO is at altitude of 1750 m, 30 km N from Smolyan (35 000) and 15 km SE from Chepelare (8 000)

БЪЛГАРИЯ



### National Astronomical Observatory - Rozhen The dome of the 2-meter tel<u>escope</u>



#### 2m telescope – oprtical scheme and instruments



photometer

#### **High-resolution astro-spectroscopy**



#### 2-m Ritchey-Chretien-Coude telscope





Evolution of the light echo after the outburst of V838 Mon in January 2002















## 2-chanel Focal Reducer Rozhen (FoReRo2) Modes of Observations

Broadband imaging
Narrowband imaging
Long slit spectroscopy
Fabry-Perot imaging
Imaging polarimetry

## FoReRo2, an example Narrow band imaging of comet Q4 (NEAT)

#### On-line, 616 nm, $H_2O^+$



#### Off-line, 642 nm, Continuum



# Comet Q4 (NEAT), May 26, 2004 $H_2O^+$ ions in the near nucleus region



## Comet Q4 (NEAT), May 26, 2004

Dynamics of the H<sub>2</sub>O<sup>+</sup> ions in the near nucleus region

11 frames x 300 sec exposure Total time of the sequence < 1 h









Recent upgrades – 2008 new coating of the optics (thanks for funding from the Bulgarian academy of sciences)





## Running upgrade – 2009 new control system for the 2-meter telescope

 March 26 2009 - Contract signed with the company Projectsoft.
In the last 2 years Projectsoft produced CSs for 2 other 2-meter telescopes made by Carl-Zeiss: Ondrejov and Terskol.

- 3. The design of the new CS is based on Siemens industry controllers.
- 4. High reliability, improved pointing accuracy, optimized positioning strategy, remote control, ...
- 5. According to the negotiated schedule the new CS should be commissioned in September 2009.
- 6. Funding comes from a project with the National science fund (contract No. DO 02-85).

Running upgrade – 2009 Optical fiber connectivity with the external world

Should be performed during the summer and commissioned in September

Planned upgrade – 2009 – 2011 (?) new echelle spectrograph for the 2-meter telescope

- 1. FEROS like design
- 2. Fiber fed, bench mounted, ...
- Presently, the available funding can cover the purchase of some components only. In order to keep the schedule we will start with the items which require most time between order and delivery.

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Practical school on spectroscopy, October 2007

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# Learning the processing of spectroscopic data





In the camera room of the coude spectrograph

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Recent development – improved conditions for conducting of workshops and schools

before

now





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#### Institute of Astronomy National Astronomical Observatory – Rozhen International co-operation

- Partner organizations of the Institute abroad are more than 100 institutions from Austria, Belgium, Canada, Estland, France, Germany, Greece, Hungary, Italy, Japan, Poland, Romania, Serbia, UK, USA, Russia, Ukraine, etc.
- The institute is an active member of the SUB-REGIONAL EUROPEAN ASTRONOMICAL COMMITTEE (SREAC), sponsored by UNESCO-BRESCE.
- Recently the Bulgarian Academy of Sciences was recognized as an associate partner of ASTRONET. Key role in this case has the Institute of Astronomy with the 2-meter telescope in the National astronomical observatory.
- · OPTICON?