# APVV meeting, 16 June 2014

**Content**

1) THEMIS SOLARNET campaign
2) D. Utz's project
3) Data from the New Solar Telescope
4) Ly$\alpha$ jets in VAULT2 on-disk data
5) European Solar Physics Meeting ESPM14 in Dublin
6) Various
    a) Day of open doors on the Lomnciky Peak Observatory
    b) Summer school "MHD in astrophyscs"
    c) My popularization, lecturing + supervising

# 1) THEMIS SOLARNET campaign

Schedule:

26 July (Saturday) – departure from Wien

28 July (Monday) – 7 August (Thursday) – observing campaign itself with a one-day break on Sunday, 3 August (free day of THEMIS staff)

8 August (Friday) – arrival back to Wien

Title of Project: Coordinated three-site observations of quiescent prominences

Instruments and spectral lines involved:

| | |
|---|---|
| THEMIS – MTR (MulTi-Raies) spectrograph | He I $D_3$, H$\alpha$, Ca II 8542 Å |
| CoMP-S | He I $D_3$, H$\alpha$, Ca II 8542 Å |
| HSFA2 (Ondřejov) | He I $D_3$ , H$\alpha$, H$\beta$, Ca II 8542 Å |
| MFS – (Multi-channel Flare Spectrograph, Ondřejov) | He I $D_3$ , H$\alpha$, H$\beta$, Ca II 8542 Å |

Aims:

- to infer spectral and spectropolarimetric characteristics, plasma properties, and magnetic structure of quiescent prominences,
- to acquire reference data for calibration of the newly-installed instrument CoMP-S.

# 1) THEMIS SOLARNET campaign

The comparable characteristics of a target prominence will be inferred from MTR and CoMP-S observations with the same interpretation tools with an aim to identify possible differences and understand their causes considering the long-slit MTR data as a reference.

Strategy for observing:

We are planning to perform a spatial scanning of target with the MTR spectrograph slit oriented parallel to the local limb in usual direction perpendicular to the slit. Since MTR will observe in different spectral regions, an influence of differential refraction has to be taken into account in simultaneous interpreting of multi-spectral data. If MTR spectrograph and favorable position of target will permit, easy compensation for the differential refraction may be possible only with the slit perpendicular to the local horizon. If weather conditions will permit, the scanning will be repeated to catch a possible evolution of target and/or propagating waves. Analogically, the same target will be observed with the CoMP-S instrument in the same spectral lines as MTR ideally at the same time in nine or eleven spectral positions across profile of each observed line.

Targets of sudden opportunity of the project are active or erupting prominences, activated filaments, and flares.

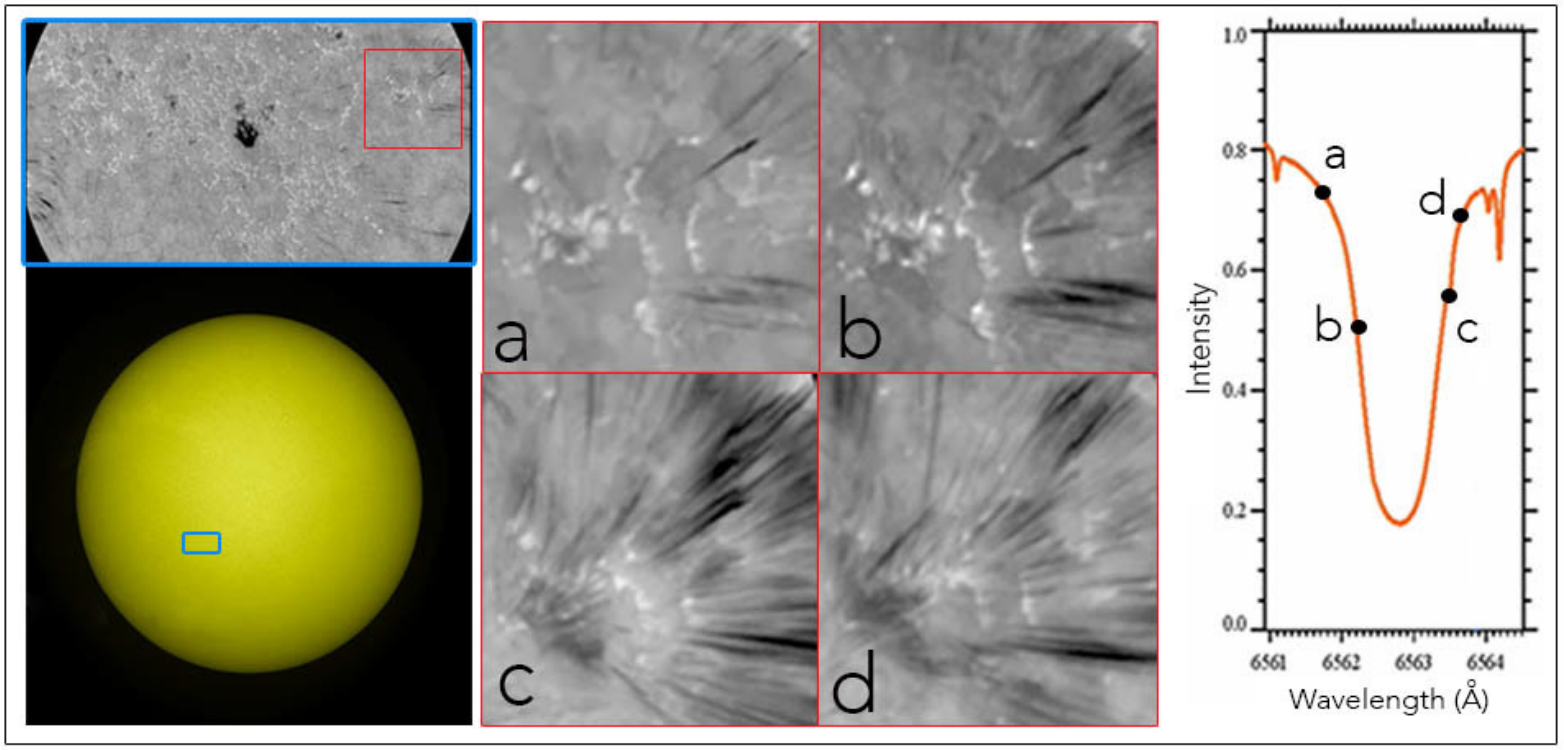
A hint from P. Kotrč: an outer rim of flare shoud display a strong linear polarization due to anisotropy in plasma properties and mag. field structure. This feature hasn't been observed yet.

# 2) D. Utz's project

- project title: The complete picture of small-scale solar magnetic field dynamics and its implications
- submitted to: FWF agency of the Austrian Academy of Science
- people involved: D. Utz and co-proposers:
  A. Hanslmeier, M. Bárta, J. Jurčák, S. Vargas Domínguez, J. Koza
- my task: Search for a link between dynamic fibrils and underlying magnetic bright points. (Up to now, there is no rigorous study dealing with this topic).
- Dominik's offer: we can use the text of his project or its parts in our applications for funding from APVV or VEGA or other agency

# 3) Data from the New Solar Telescope

Dominik promissed in Nižná and during his stay at AI SAS that when he will be at BBSO this year, he will ask S. Vargas (now at BBSO) to provide me the dataset, example of which is shown in the following figure. High angular resolution resolution allows searching for a link between dynamic fibrils and underlying magnetic bright points.



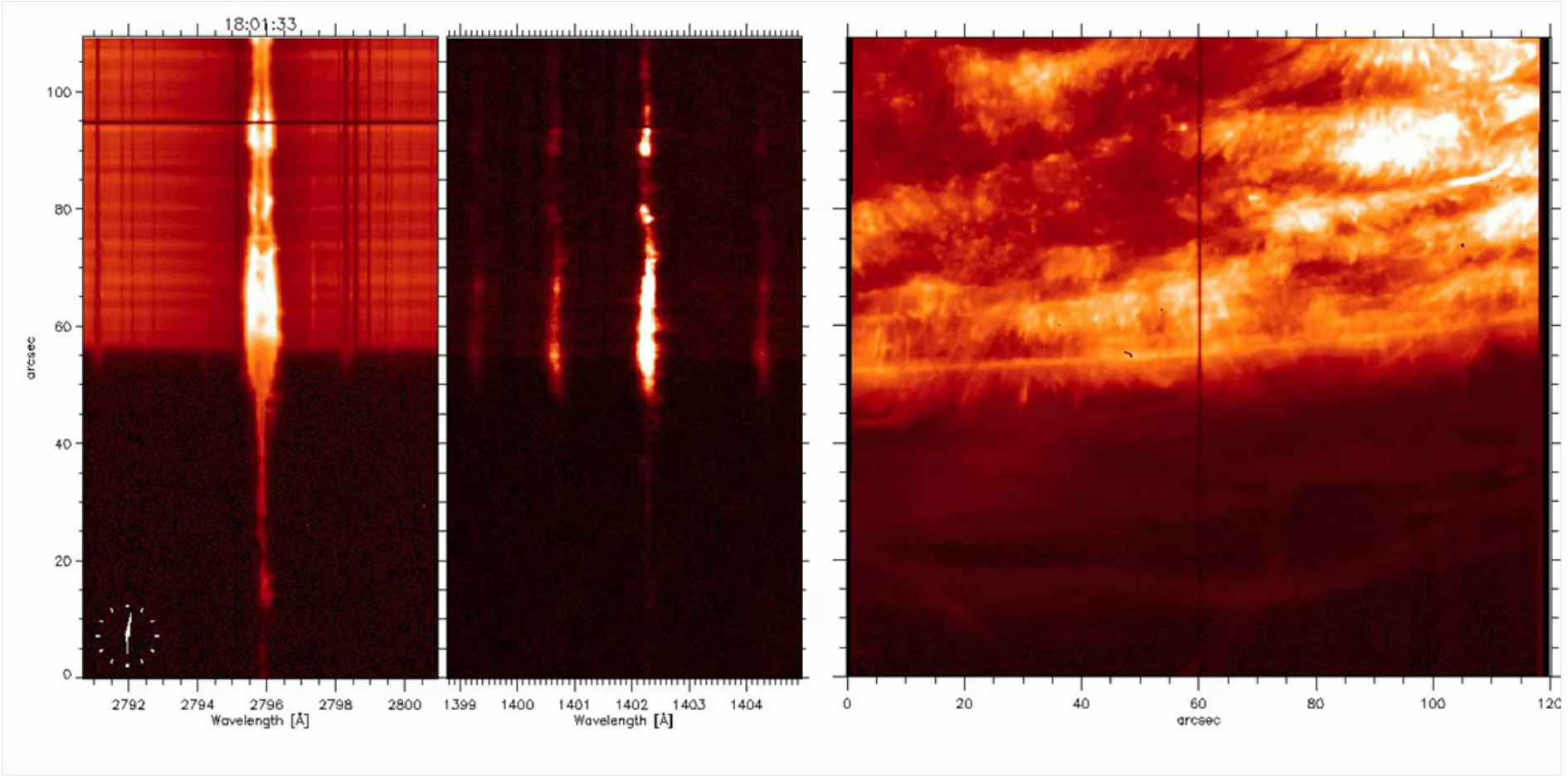

An example of Hα NST image taken from the Domink's project.

# 4) Ly$\alpha$ jets in VAULT2 on-disk data

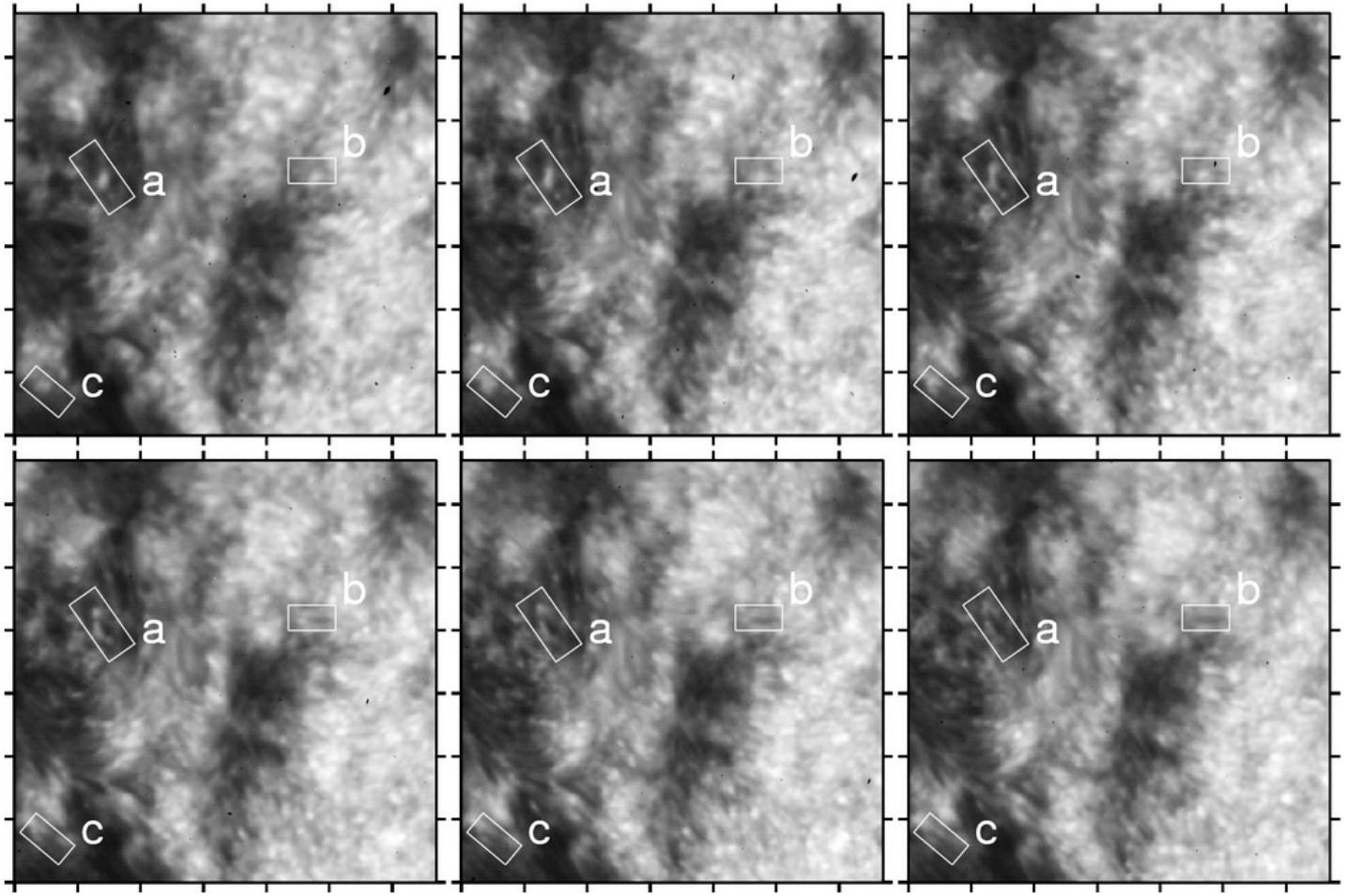
- follow-up project of A&A 499, 817 (2009)
- differences:
  - A&A (2009): just 4 near-limb VAULT2 images showing spicule-like jets at supergranular boundaries
  - this project: 16 disc VAULT2 images showing probably Ly$\alpha$ counterparts of H$\alpha$ dynamic fibrils in a plage, not measured and analysed yet
- Why to do that? Does it have a sense when IRIS is on orbit and CLASP (Chromospheric Lyman Alpha SpectroPolarimeter) is scheduled for launch in September 2015?
  - J. Dudík in Nižná: „Yes, it has still a sense.“

**Comparison**

| | |
|---|---|
| VAULT2 | launched in 2002<br>30-cm telescope, just Ly$\alpha$ imager<br>angular resolution: about 0.5 arcsec<br>temporal resolution: 17 s |
| IRIS | launched in 2013<br>20-cm telescope, imager + spectrograph but NO Ly$\alpha$<br>angular resolution: probably worse than VAULT2, unclear whether IRIS resolves spicule-like jets on the disk, but certainly YES near the limb |
| CLASP | scheduled for 2015<br>30-cm telescope, just Ly$\alpha$ long-slit spectrograph with polarimeter<br>angular resolution: 1.5 arcsec (slit width) $\times$ 2.9 arcsec (along slit) |




Example IRIS limb image showing spicule-like jets.




A sequence of VAULT2 disk images showing evolution of jets a, b, c, in a plage, which are probably Ly$\alpha$ counterparts of H$\alpha$ dynamic fibrils.

Field of view: 67 arcsec $\times$ 67 arcsec.

Tickmark spacing: 10 arcsec.

Time runs from the upper left panel to the right.

Time step between images: 34 s.

Samples “a” and “c” have a dark core with a bright envelope.

# 5) European Solar Physics Meeting ESPM14 in Dublin

- 8 – 12 September 2014
- registration – done
- abstract submission – done
- titles of poster abstracts submitted:
    1. The CoMP-S instrument at the Lomnicky Peak Observatory - status report
    2. Transmission profile of the Dutch Open Telescope Halpha Lyot filter
    3. Inferring spectral characteristics of the Halpha spectral line observed by the Dutch Open Telescope Lyot filter
    4. Search for Alfven waves in a bright network element observed in Halpha
- costs, paid from the APVV project:
    - conference fee: 320 EUR (paid)
    - flight ticket: 282 EUR (paid, Bratislava - Dublin)
    - hotel: 425 EUR (booked, not paid)
    - diets: 265 EUR

# 5) ESPM14

## Topics to discuss there and people I want to meet with

**Transmission profile of NFI/SOT Lyot filter in Na I $D_1$**

- there is an indications of continuum light leak into Na I $D_1$ NFI/SOT images based on data from Alfred de Wijn
- some Japans (e.g., Y. Suematsu) from Hinode/SOT team or somebody else from NFI/SOT team or Alfred de Wijn, to show them images and plots prepared in advance
- to invite them:
  - for collaboration in closer investigation of the leak applying the procedure published in AN 2014
  - to become a co-author of a resulting paper

**Wavelets of spectral characteristics inferred from DOT H$\alpha$ images, co-alignment of DOT H$\alpha$ images with SoHO/CDS spectra**

Kostas Tziotziou or somebody else

# 6) Various

**Day of open doors on the Lomnciky Peak Observatory**

Saturday of 19 July is my preferred day for being a guide in the observatory. I plan to come up already in the afternoon of Friday of 18 July and to stay there overnight.

**Summer school "MHD in astrophysics"**

- arrival of P. Jelínek to AI SAS: 11 August
- stay at AI SAS with his family: 11 – 17 August
- Summer school „MHD in astrophysics“: 18 – 22 August
- departure: 23 August

These dates were confirmed in Peter's e-mail from 15.6.

**Popularization, lecturing, supervising**

lecture: Slnko ako inšpirácia a vzdelanie, Hvezdáreň Valašské Meziříčí, 24.5. 2014

lecture: Anatómia Slnka, Krajská hvezdáreň Kysucké Nové Mesto, pozvanie na 23.6. 2014

konzultácia Stredoškolskej odbornej činnosti: Alžbeta Pudíková, Gymnázium Poprad, 3. ročník

Téma, ktorú si A. Pudíková sama vybrala a sformulovala názov:

**Slnečná granulácia, vplyv slnečnej aktivity na vznik slnečných škvŕn a Haleho cyklus**

umiestnenie: 1. miesto v Krajskom kole SOČ
4. miesto v Celoštátnom kole SOČ