



Leibniz-Institut für  
Astrophysik Potsdam

# Overview of the four SOLARNET campaigns in 2016 at GREGOR

*Christoph Kuckein*

Observers: P. Gömöry (PI), A. Veronig, J. Thalmann, A. Kučera, H. Balthasar, and C. Kuckein

Title: *Magnetic and dynamical parameters of active region filaments*

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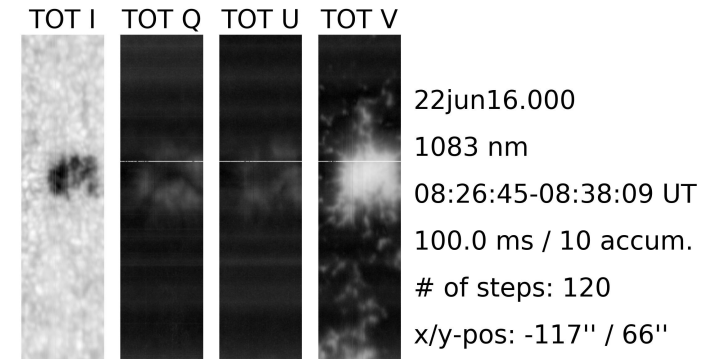
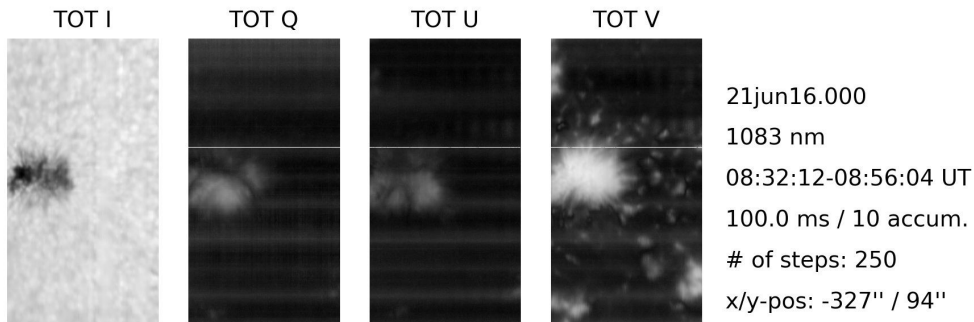
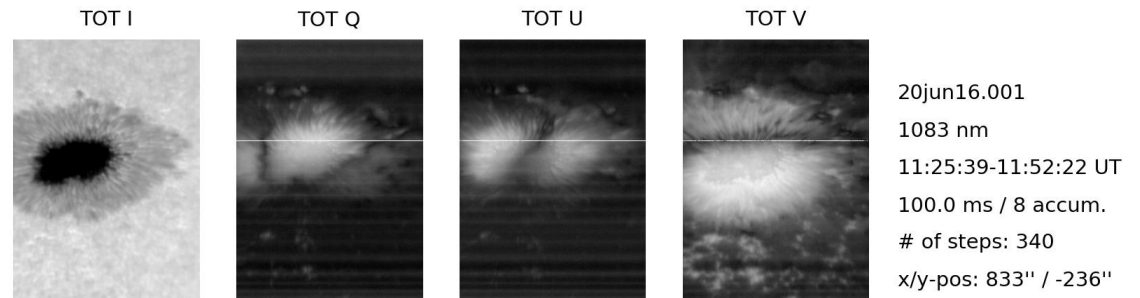
- Dates: 2016 June 18 – 26 (8 days)
  - Observed days: June 19, 20, 21 and 22 (50% of total of days)
  - Problems: calima (high dust values)
  - Instruments:
    - **GRIS**: He I 10830 Å spectropolarimetry
    - **GFPI**: He I D3 (5875 Å Slovak own filter) imaging spectroscopy
    - **HiFI**: G-band + Ca II H (3968 Å/10.1 Å) imaging
- Coordinated observations: IRIS and EIS (HOP 305)



PI: P. Gömöry

Title: *Magnetic and dynamical parameters of active region filaments*

- GRIS: He I 10830 Å spectropolarimetry (some examples)



KIS GREGOR archive

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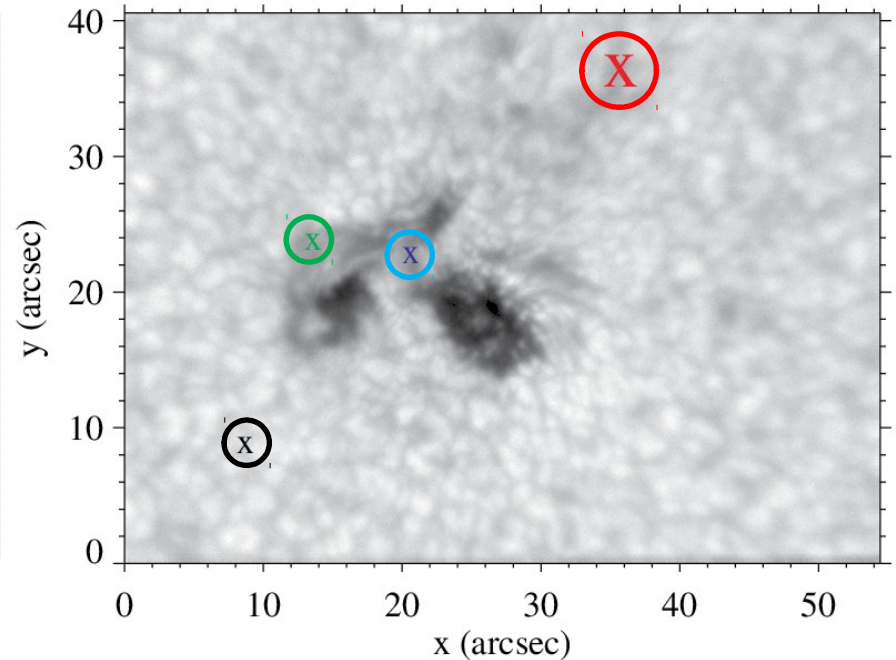
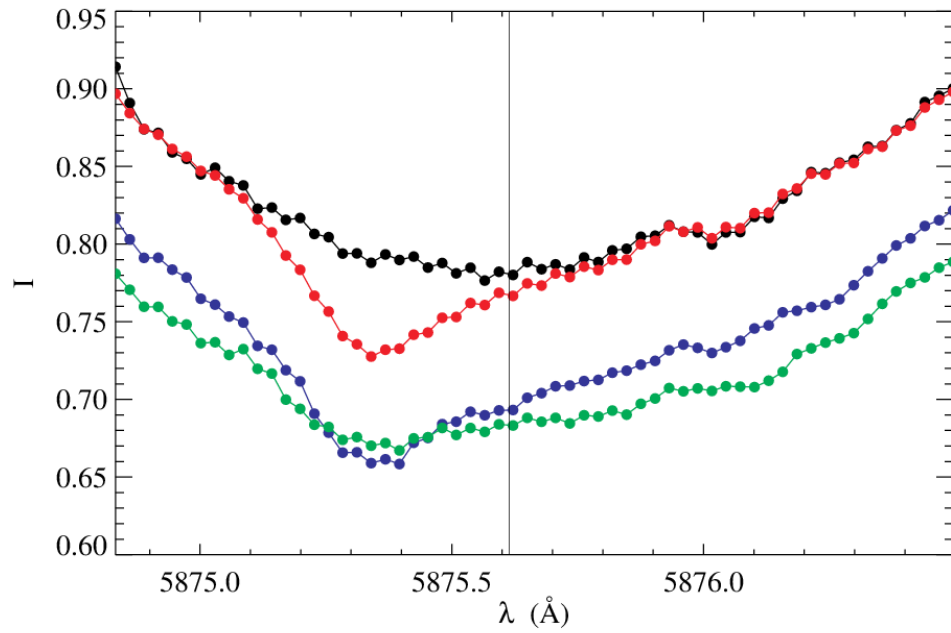
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- **GFPI**: He I D3 (5875 Å). Only observed on June 19 & 22
  - Number of spectral points: 60
  - Accumulations per step: 8
  - Wavelength sampling: 28.2 mÅ
  - Spectral wavelength grid: equidistant
  - Spatial binning of cameras: 2x2
  - 1 pixel: 0.081''

PI: P. Gömöry

Title: *Magnetic and dynamical parameters of active region filaments*

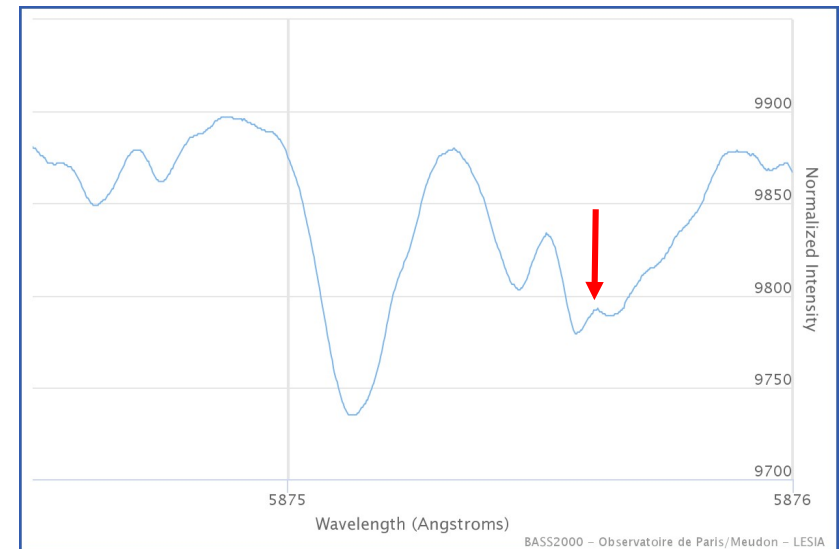
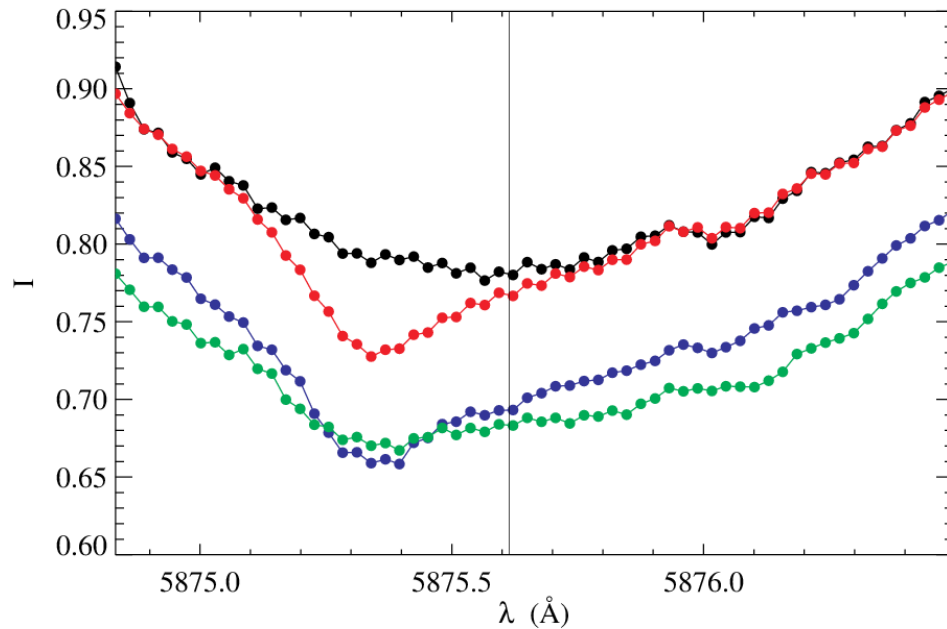
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PI: P. Gömöry

Title: *Magnetic and dynamical parameters of active region filaments*

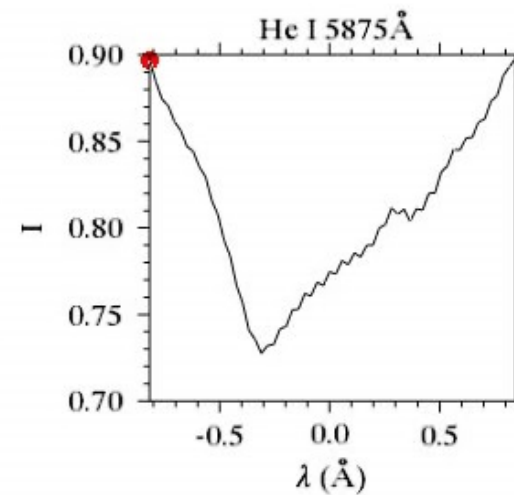
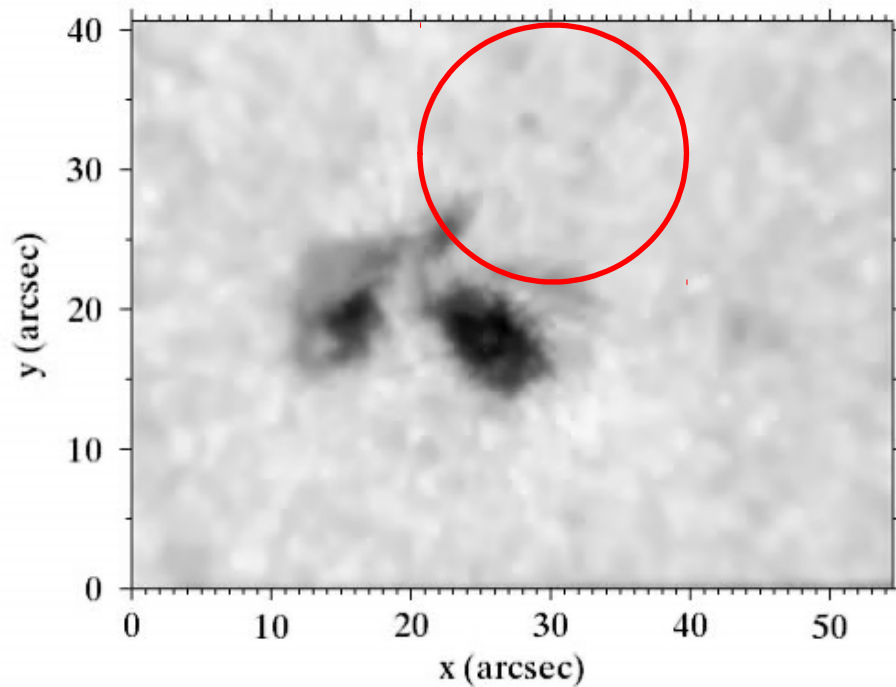
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Title: *Magnetic and dynamical parameters of active region filaments*

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  - Spectral wavelength grid: equidistant





Observers: L. Kleint (PI), C. Kuckein, and M. Kuhar

Title: *Investigating the origin of flares with spectropolarimetry of He I 10830 Å*

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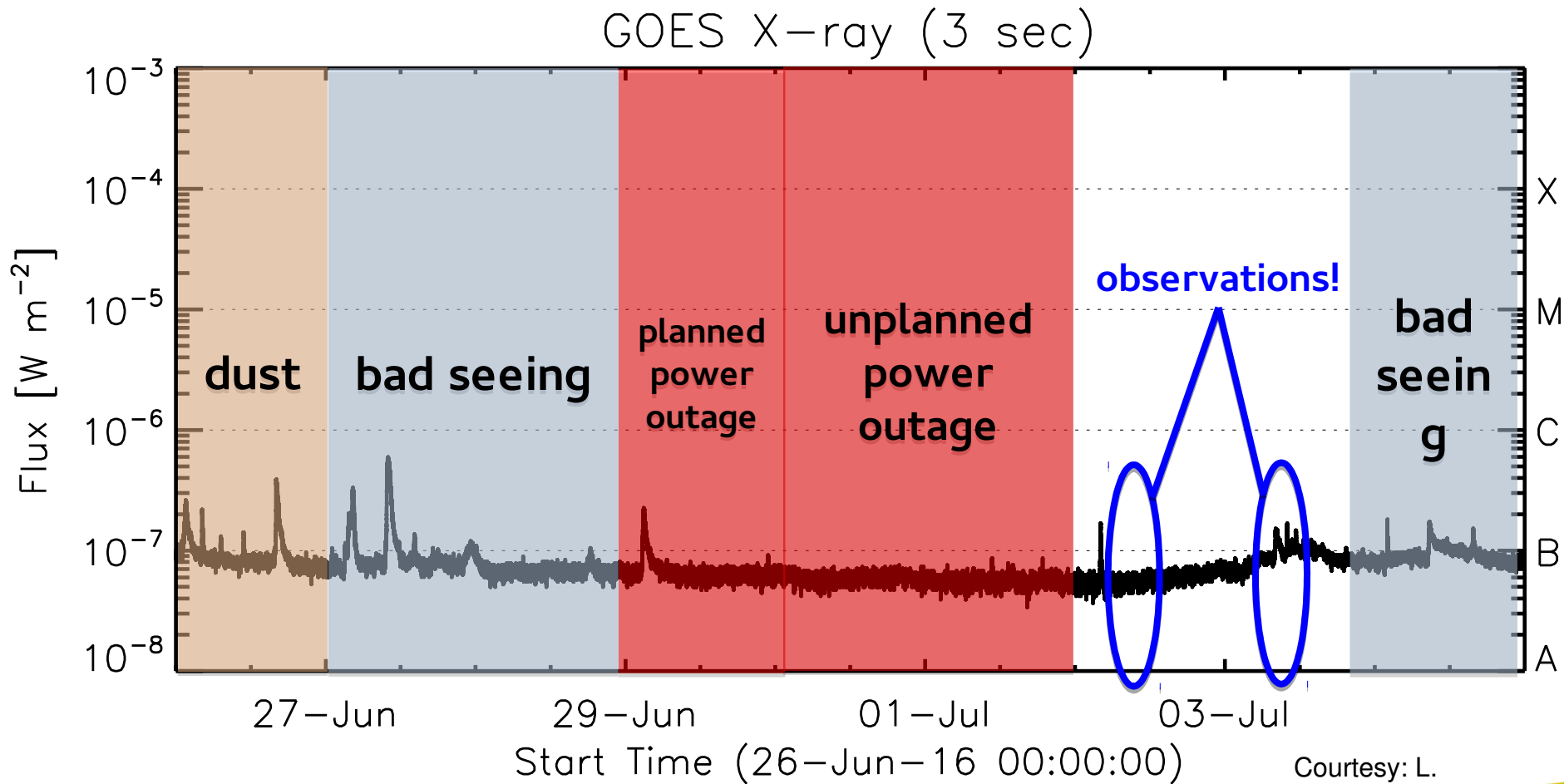
- Dates: 2016 June 26 – July 5 (9 days)
  - Observed days: July 2, 3 and ~4 (**27.7%** of total)
  - Problems: Power outage and GREGOR computer hardware problem, dust
  - Instruments:
    - **GRIS**: He I 10830 Å spectropolarimetry
    - **GFPI**: Na I D2 (5890 Å) imaging spectroscopy
    - **HiFi**: Blue continuum (4506 Å) + Ca II H (3968 Å / 10.1 Å) imaging
    - ChroTel: special request to obtain 1– min cadence H $\alpha$  images
  - Coordinated observations: IRIS and Hinode (**HOP 310**)
    - HOP title: *GREGOR-Hinode-IRIS observations to study flares over a wide spectral range*





Observers: L. Kleint (PI), C. Kuckein, and M. Kuhar

Title: *Investigating the origin of flares with spectropolarimetry of He I 10830 Å*



Courtesy: L. Kleint

PI: L. Kleint (PI)

Title: *Investigating the origin of flares with spectropolarimetry of He I 10830 Å*

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- ChroTel
  - H $\alpha$  filtergrams
  - 1-min cadence
  - Filament eruption
  
- ChroTel offers complementary full disk images especially useful for filament observations, when no H $\alpha$  slit jaw is available
  
- The high cadence mode is a plus for GREGOR observations

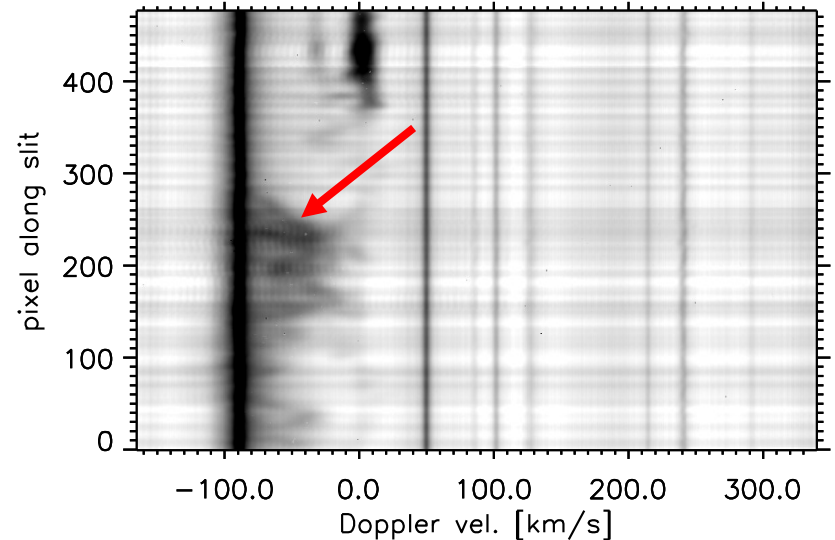
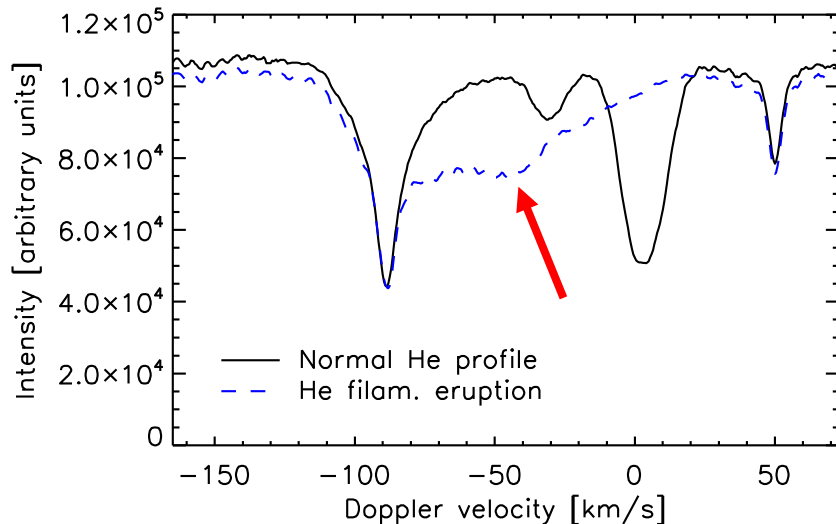


PI: L. Kleint (PI)

Title: *Investigating the origin of flares with spectropolarimetry of He I 10830 Å*

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- **GRIS**: He I 10830 Å spectropolarimetry
  - Filament eruption
    - Filament seen for the first time in the GREGOR H $\alpha$  **slit-jaw** camera
  - Strongly blueshifted He I profiles
  - Data analysis in progress



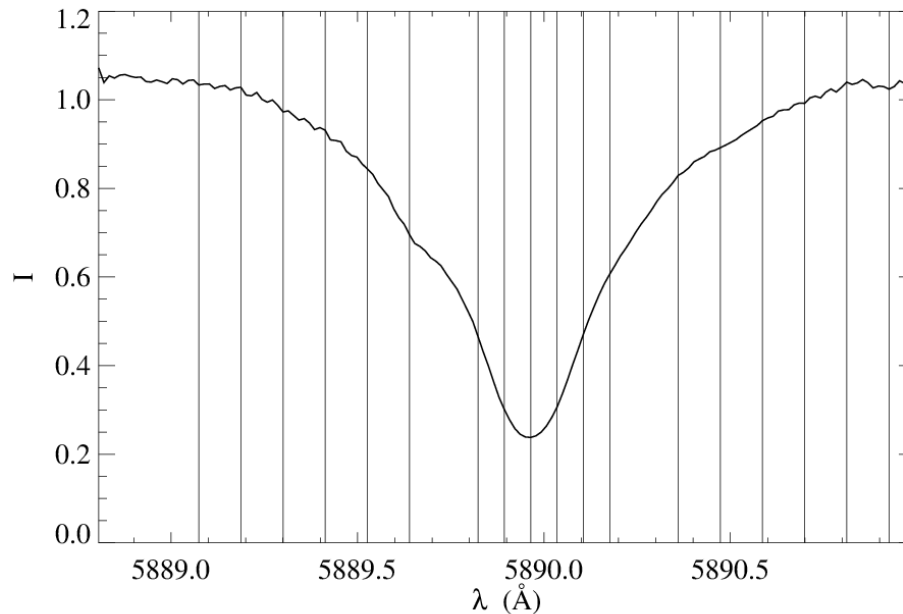
Courtesy: L. Kleint

PI: L. Kleint (PI)

Title: *Investigating the origin of flares with spectropolarimetry of He I 10830 Å*

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- **GFPI:** Na I D2 (5890 Å) imaging spectroscopy
  - Number of spectral points: 18
  - Wavelength sampling (non-equidistant grid): 113.0 – 70.6 – 113.0 mÅ
  - Spectral wavelength grid: non-equidistant (40 – 25 – 40 steps)

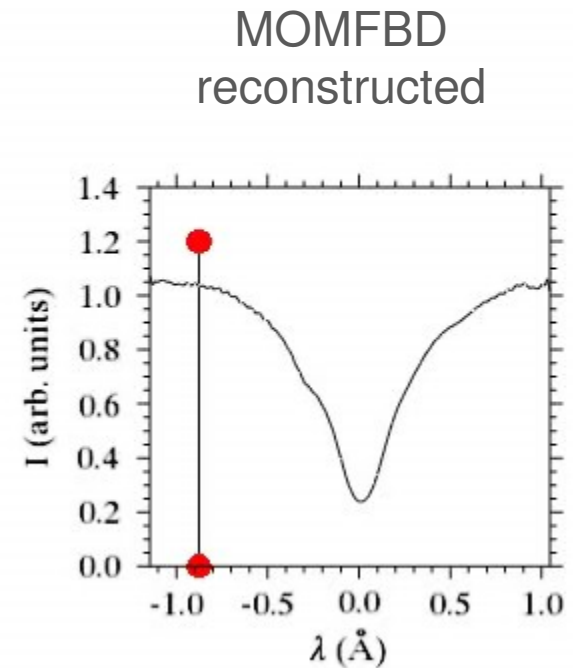
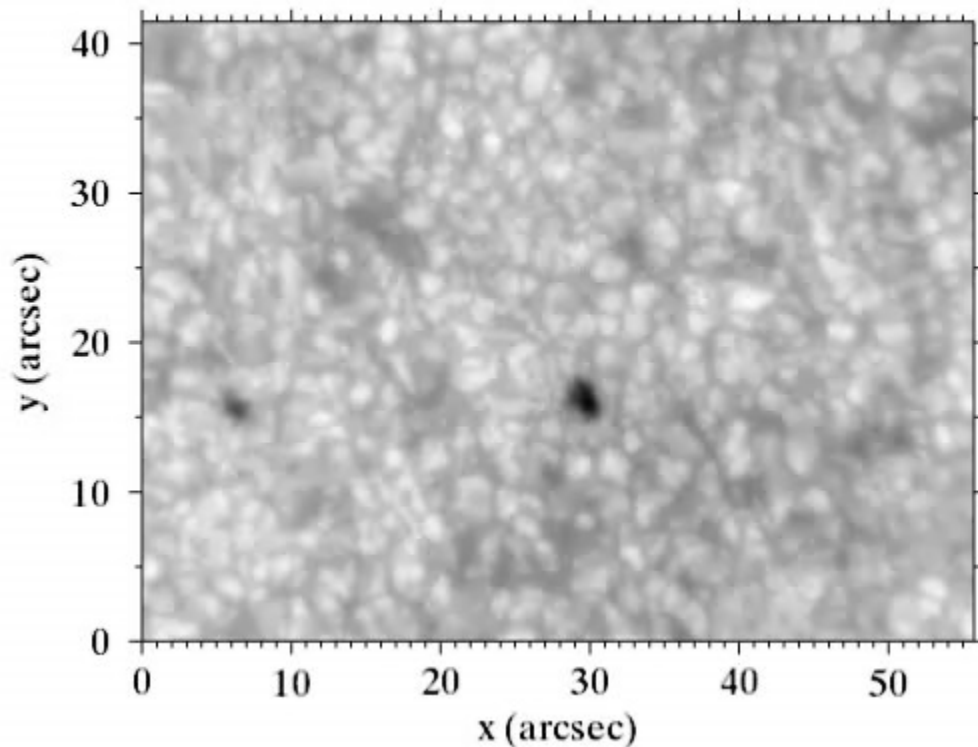


PI: L. Kleint (PI)

Title: *Investigating the origin of flares with spectropolarimetry of He I 10830 Å*

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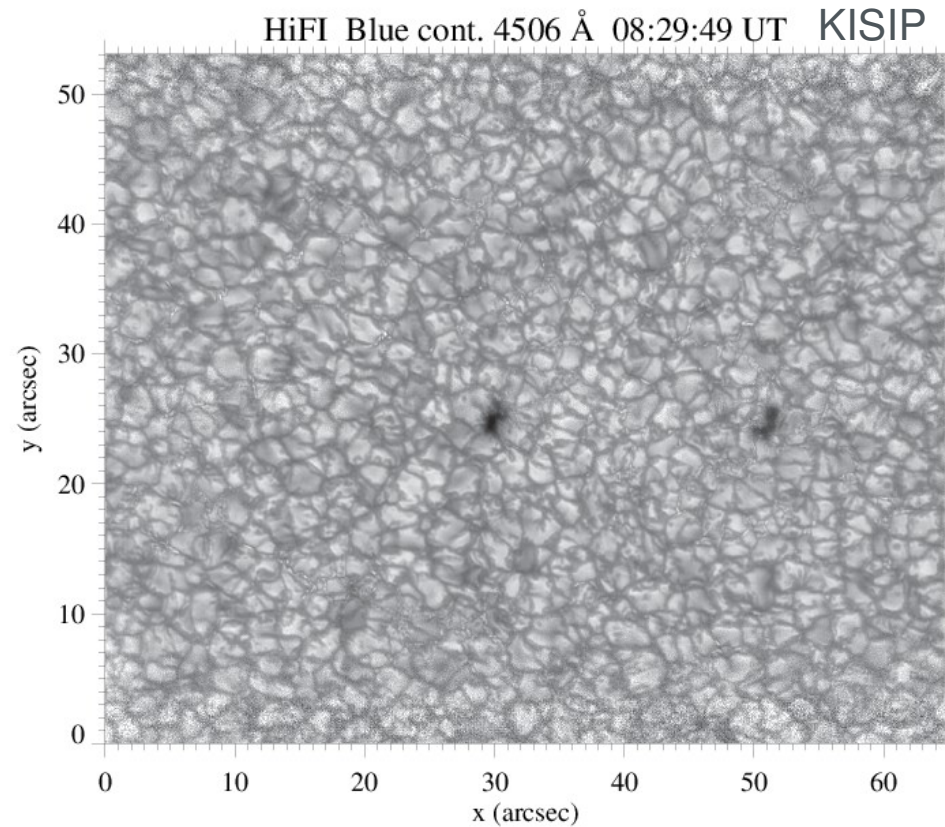
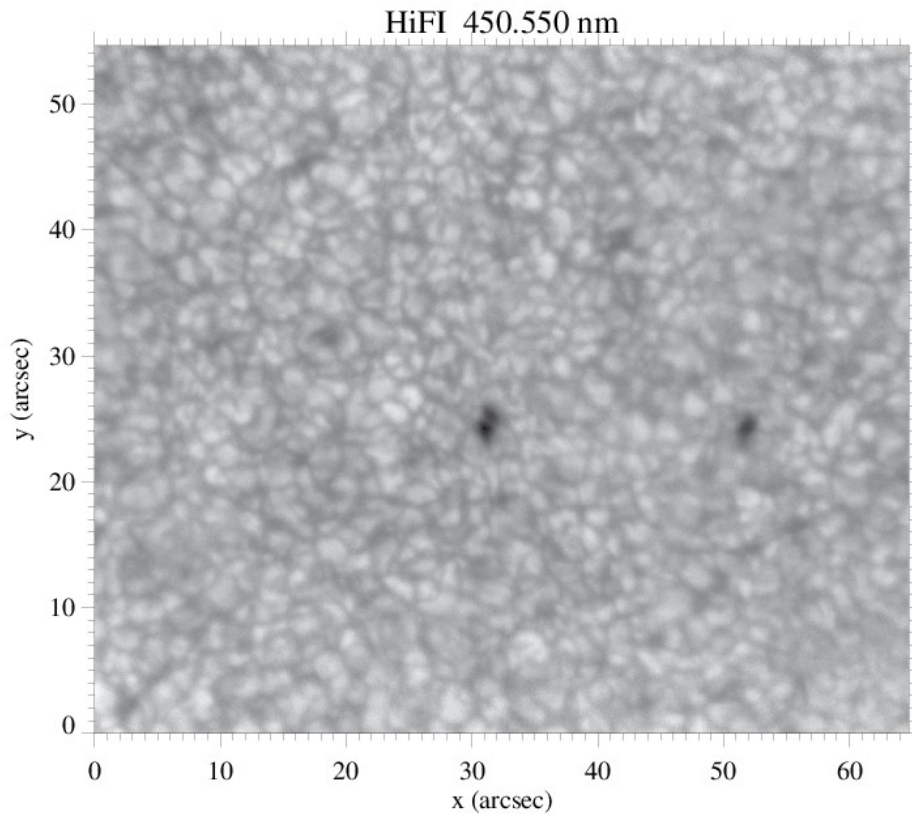
PI: L. Kleint (PI)

Title: *Investigating the origin of flares with spectropolarimetry of He I 10830 Å*

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HiFI: Blue continuum (4506 Å)

Blue continuum (4506 Å) **reconstructed**





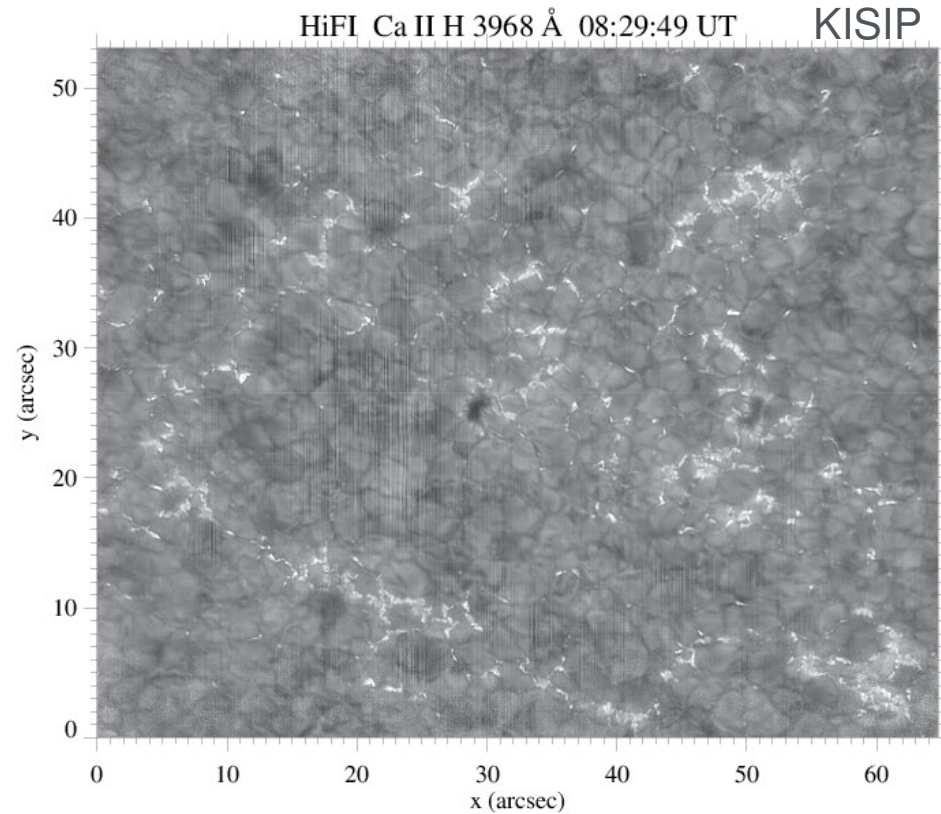
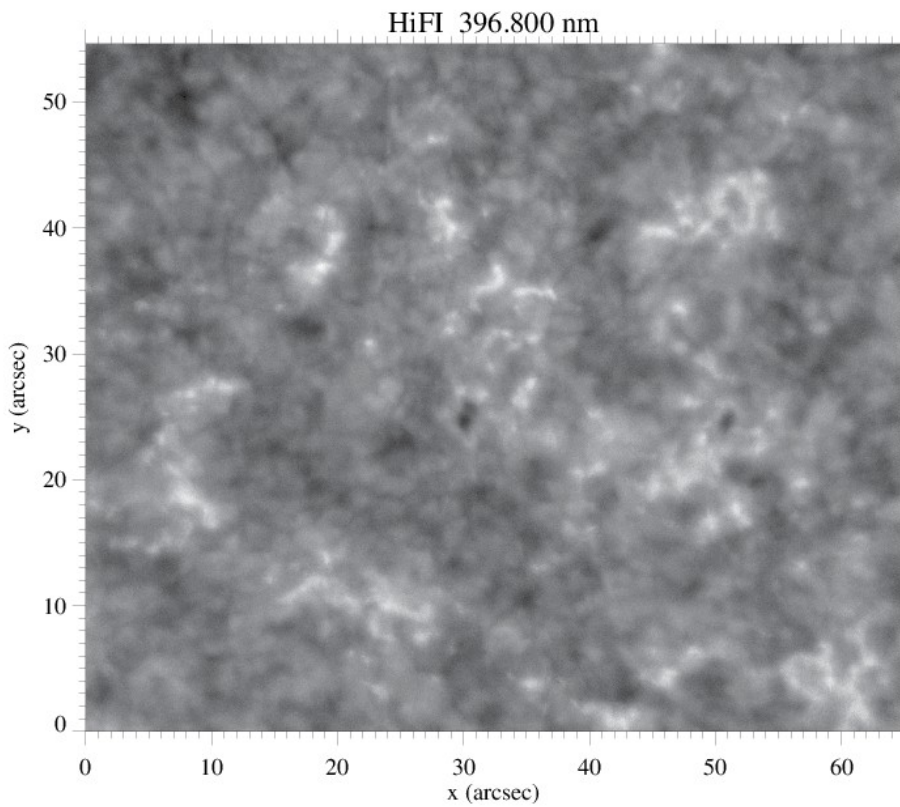
PI: L. Kleint (PI)

Title: *Investigating the origin of flares with spectropolarimetry of He I 10830 Å*

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HiFI: Ca II H (3968 Å / 10.1 Å)

Ca II H (3968 Å / 10.1 Å) **reconstructed**



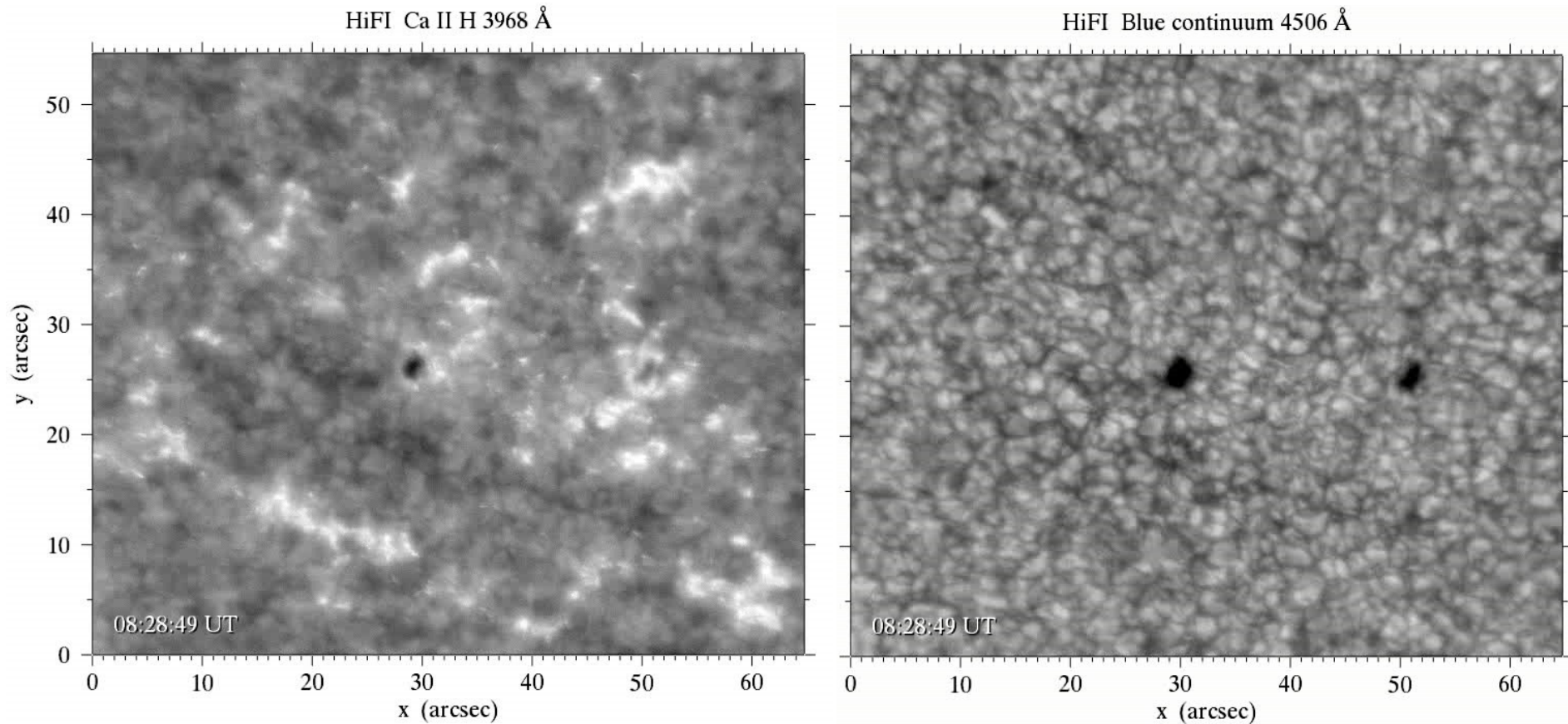


PI: L. Kleint (PI)

Title: *Investigating the origin of flares with spectropolarimetry of He I 10830 Å*

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HiFI imaging system: Exp. Time: 6 ms, # images per burst: 500, Frame rate: 49 Hz



Not reconstructed yet

Observers: V. Henriques (PI), D. Kuridze, C. Kuckein,  
M. Verma, P. Keys, and C. Fischer

Title: *Kelvin-Helmholtz instability related heating of chromospheric  
small-scale jets: constraining spatial modes*

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- Dates: 2016 July 5 – 14 (9 days)
  - Observed days: July 7 and 8 (22.2% of total)
  - Weather: many dust or bad seeing days
  - Instruments:
    - **GFPI**: H $\gamma$  (6563 Å) imaging spectroscopy
    - **HiFI**: Ca II H (3968 Å / 10.1 Å) + Ca II H (3968 Å / 1 Å) imaging
  - Cordinated observations: IRIS

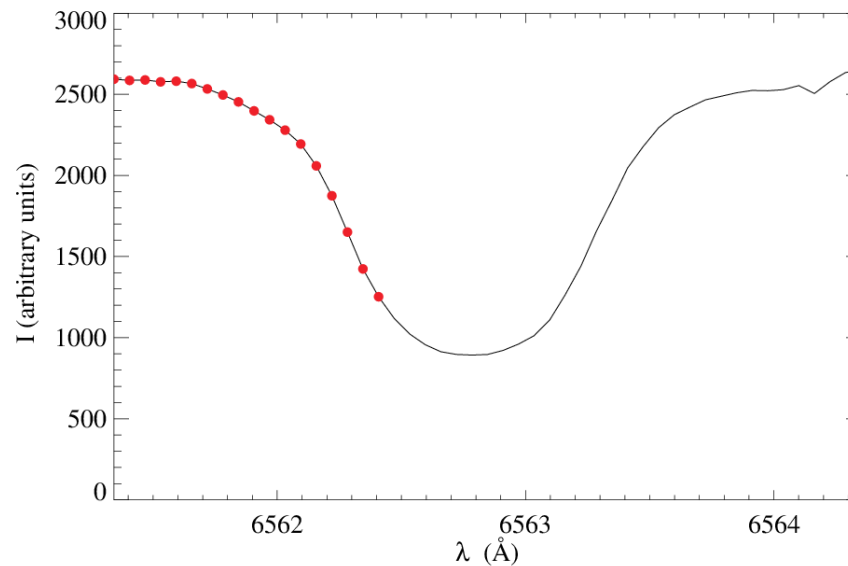


PI: V. Henriques (PI)

Title: *Kelvin-Helmholtz instability related heating of chromospheric small-scale jets: constraining spatial modes*

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- **GFPI:** H $\delta$  (6563 Å) imaging spectroscopy
  - Number of spectral points: 19
  - Wavelength sampling (equidistant grid): 62.7 mÅ
  - Cadence: < 20 s
  - Spectral wavelength grid: equidistant (only blue H $\delta$  wing)

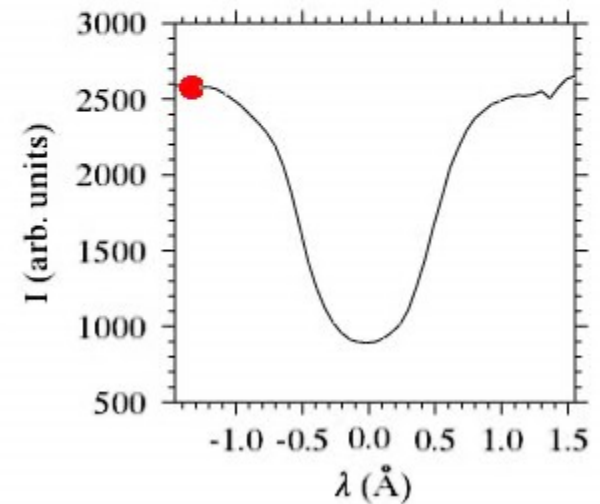
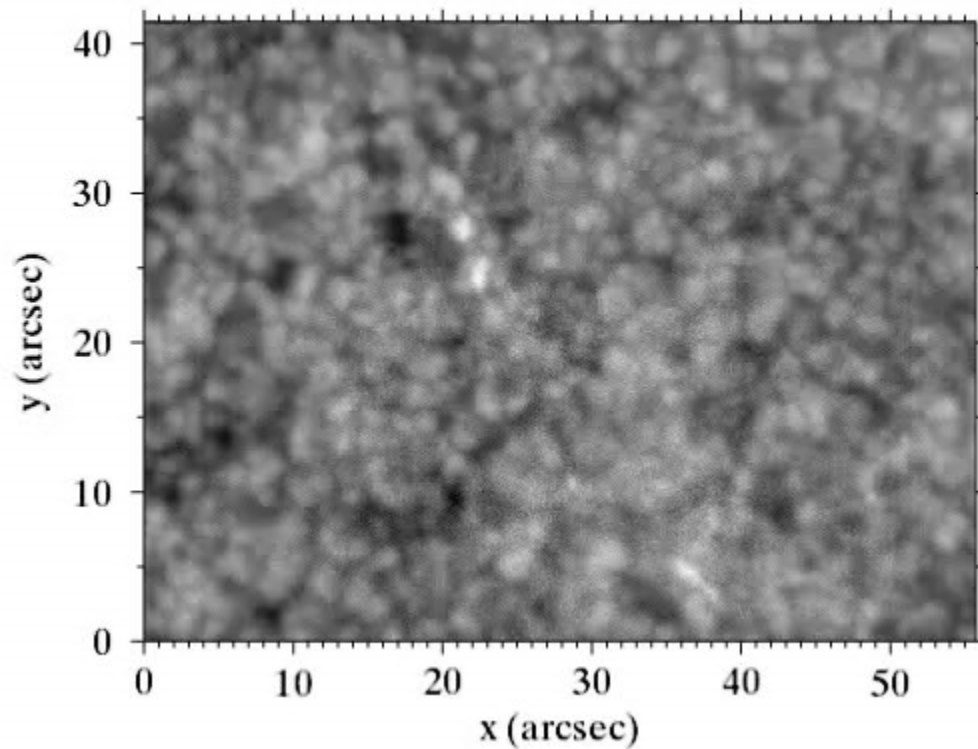


PI: V. Henriques (PI)

Title: *Kelvin-Helmholtz instability related heating of chromospheric small-scale jets: constraining spatial modes*

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- **GFPI:** H $\gamma$  (6563 Å) imaging spectroscopy

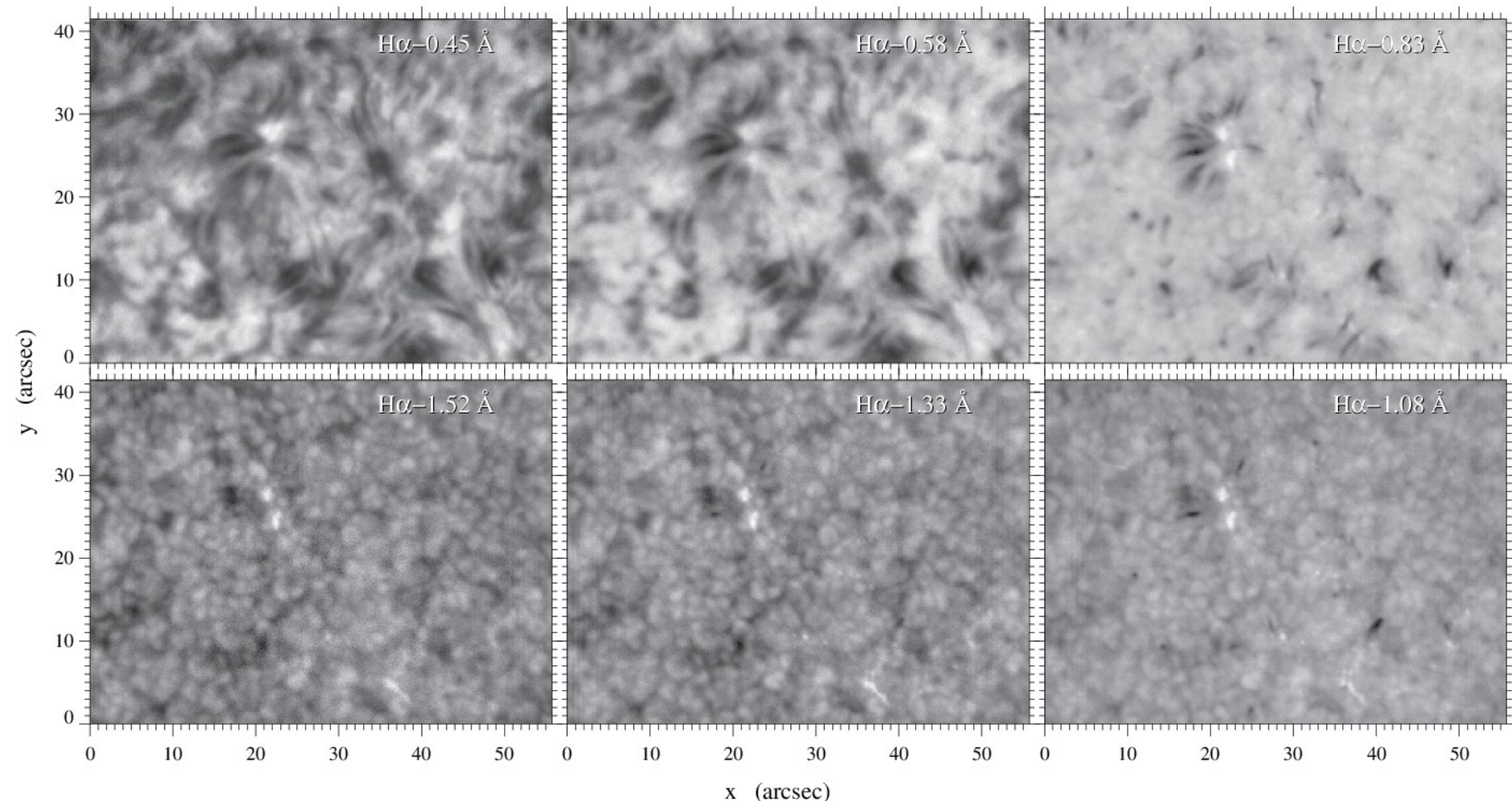


PI: V. Henriques (PI)

Title: *Kelvin-Helmholtz instability related heating of chromospheric small-scale jets: constraining spatial modes*

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- **GFPI:** H $\alpha$  (6563 Å) imaging spectroscopy





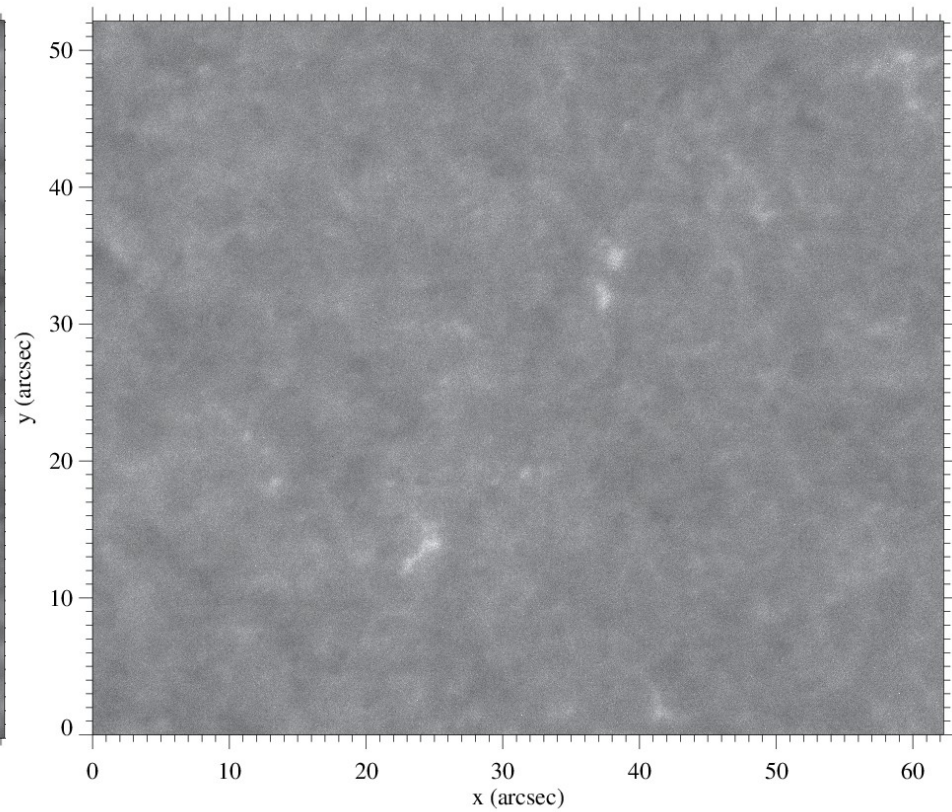
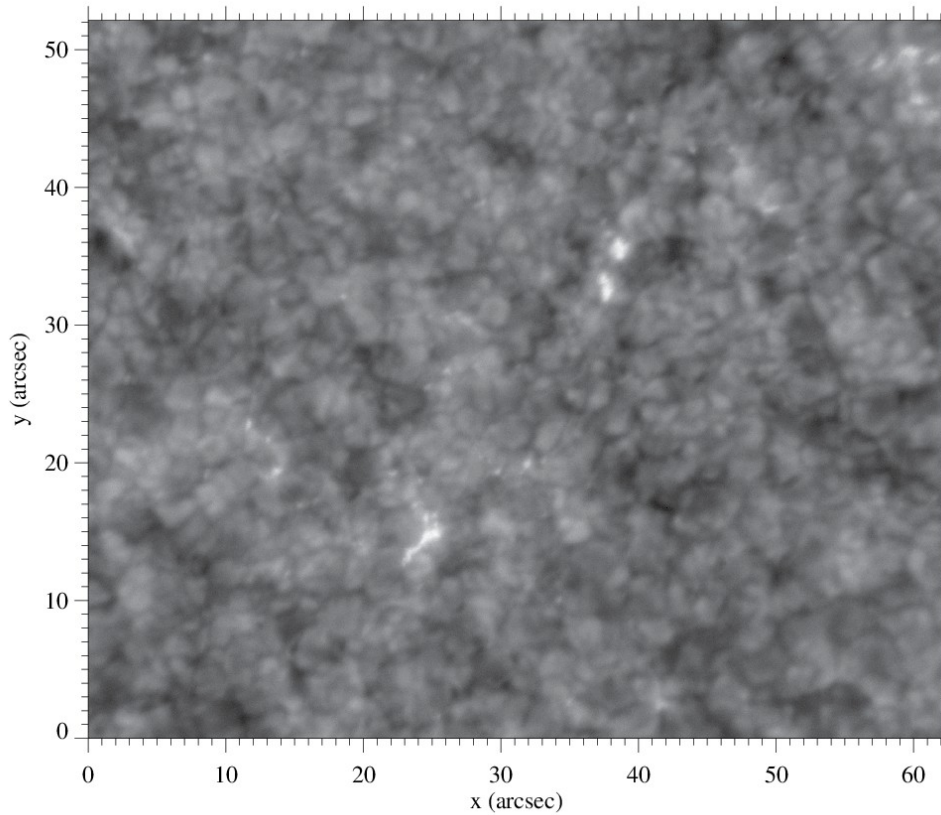
Observers: V. Henriques (PI)

Title: *Kelvin-Helmholtz instability related heating of chromospheric small-scale jets: constraining spatial modes*

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- **HiFI**: Ca II H (3968 Å / **10.1 Å**)

Ca II H (3968 Å / **1 Å**) imaging



Not reconstructed yet

Observers: P. Rudawy, M. Verma, and C. Fischer

PI: G. Cauzzi

Title: *White light emission in flares*

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- Dates: 2016 July 14 – 23 (9 days)
  - Observed days: July 15, 16, 17, and 19 (**44.4%** of total)
  - Instruments:
    - **GFPI**: H $\gamma$  (6563 Å) + Fe I 6173 Å imaging spectroscopy (consecutively scanning of two lines)
    - **PCO4000**: Ca II H (3968 Å / 10.1 Å) + Blue continuum (4506 Å) imaging
  - Coordinated observations: IRIS



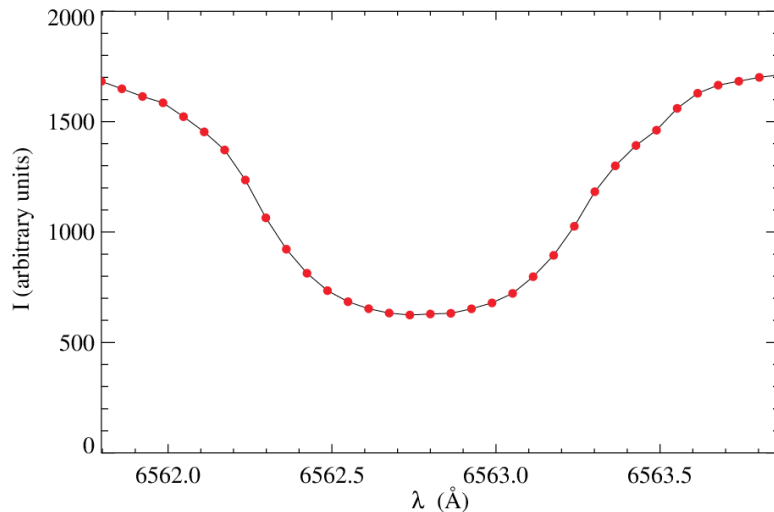
Observers: P. Rudawy, M. Verma, and C. Fischer

PI: G. Cauzzi

Title: *White light emission in flares*

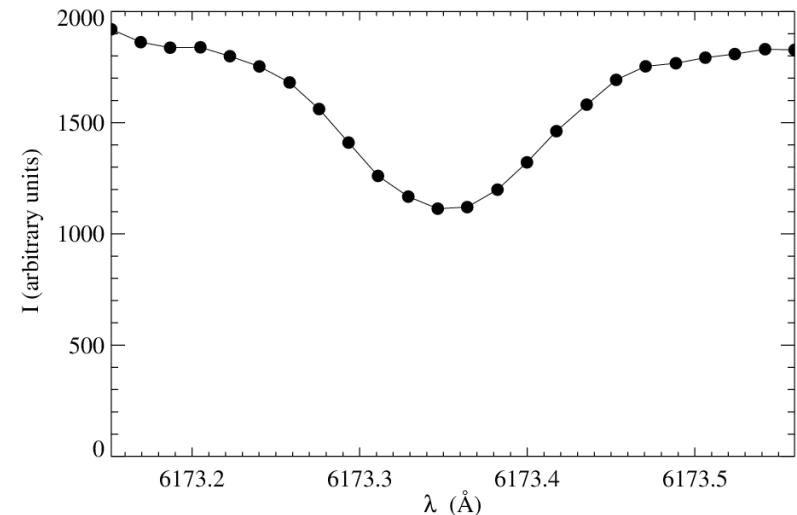
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- **GFPI: H $\alpha$  (6563 Å)** imaging spectroscopy
  - Number of spectral points: 34
  - Wavelength sampling: 62.7 mÅ
  - Spectral wavelength grid: equidistant



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- **GFPI: Fe I 6173 Å** imaging spectroscopy
  - Number of spectral points: 24
  - Wavelength sampling: 17.7 mÅ
  - Spectral wavelength grid: equidistant

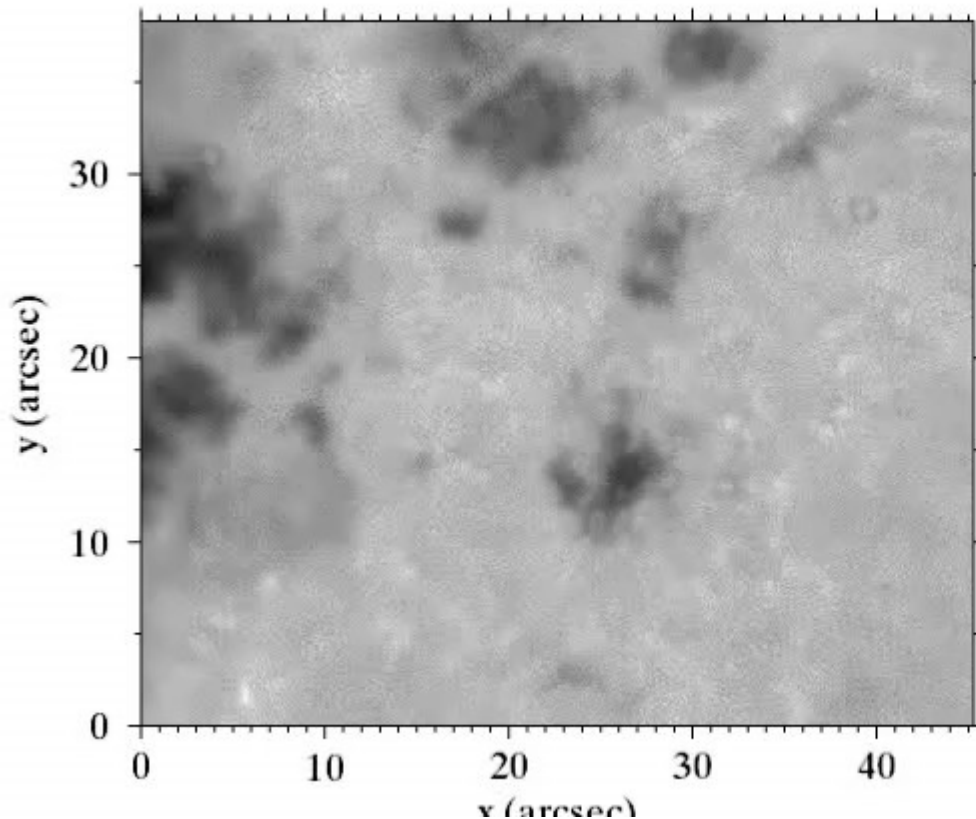


Observers: P. Rudawy, M. Verma, and C. Fischer

PI: G. Cauzzi

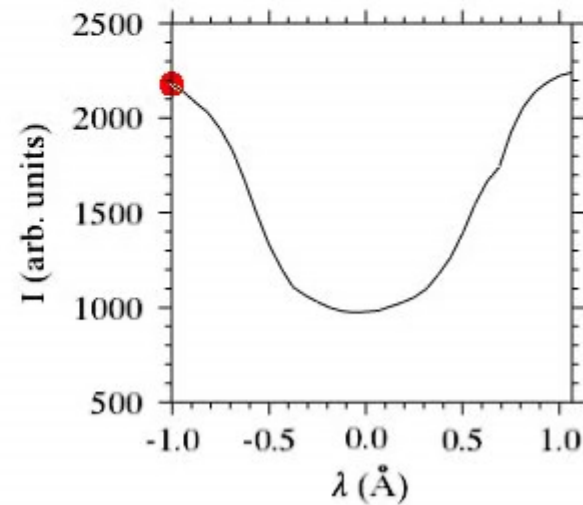
Title: *White light emission in flares*

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**GFPI: H $\alpha$  (6563 Å)** imaging spectroscopy

- Number of spectral points: 34
- Wavelength sampling: 62.7 mÅ
- Spectral wavelength grid: equidistant

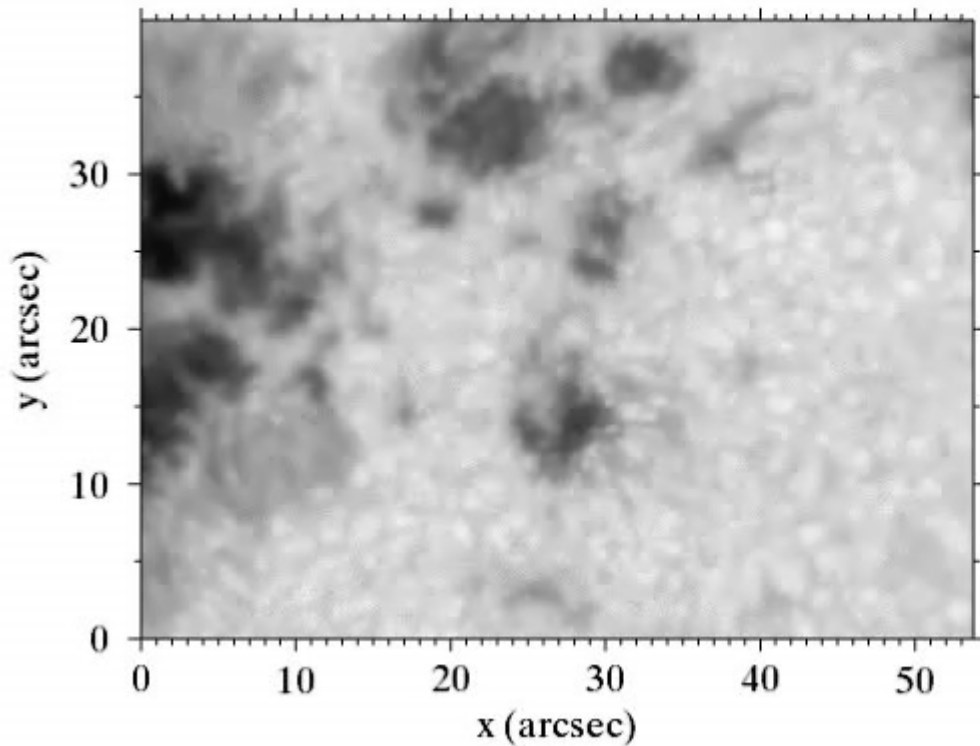


Observers: P. Rudawy, M. Verma, and C. Fischer

PI: G. Cauzzi

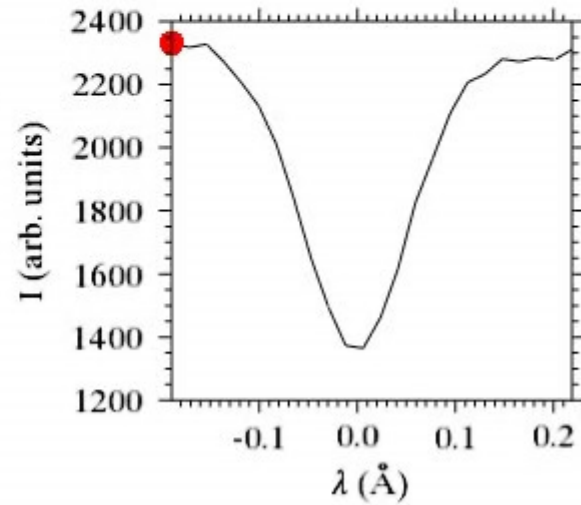
Title: *White light emission in flares*

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**GFPI: Fe I 6173 Å** imaging spectroscopy

- Number of spectral points: 24
- Wavelength sampling: 17.7 mÅ
- Spectral wavelength grid: equidistant

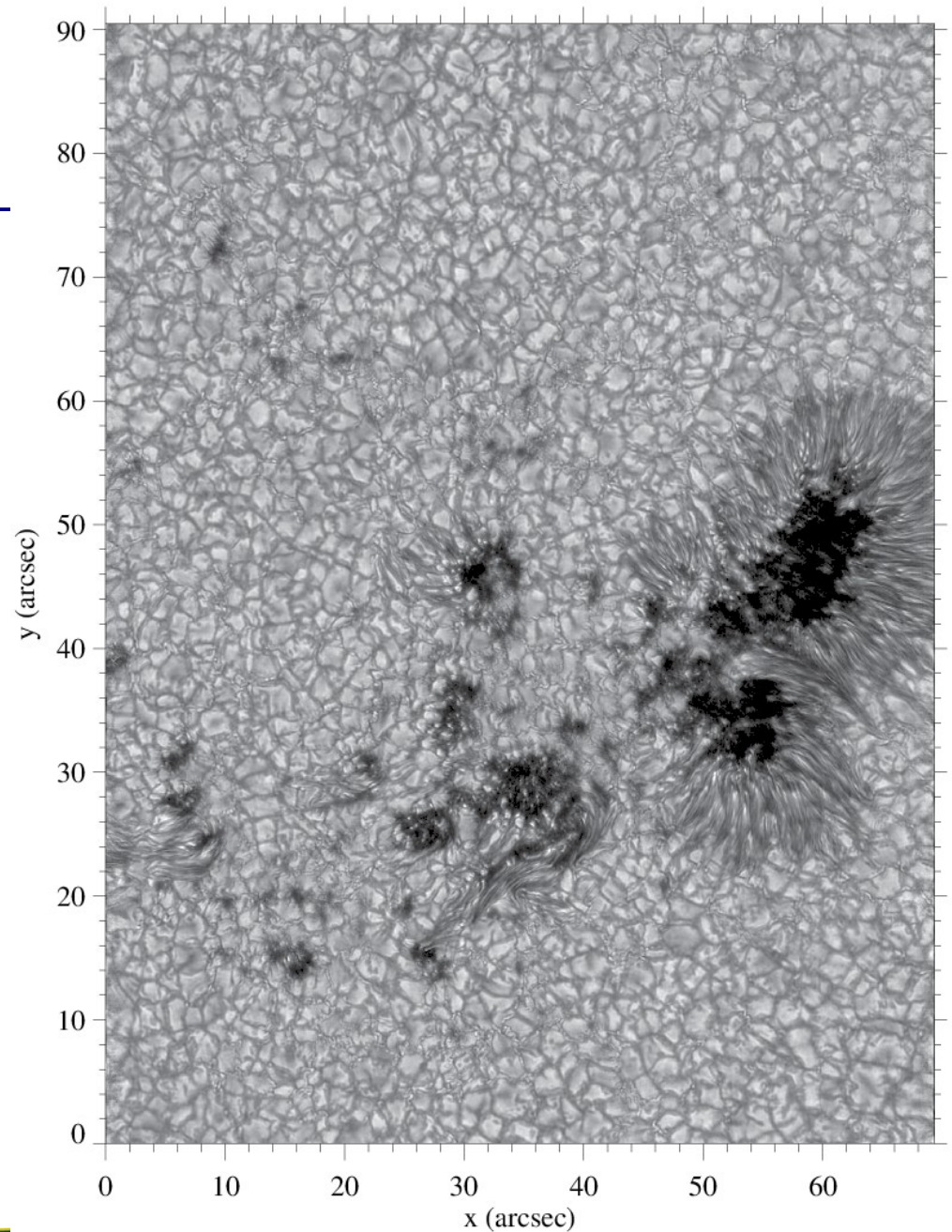


PI: G. Cauzzi

Title: *White light emission in flares*

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- **PCO4000**: Blue continuum (4506 Å)
  - Blue imaging channel of GFPI
  - Speckle-reconstructed with KISIP



# Summary

- All SOLARNET campaigns:
  - obtained data (though not much)
  - were supported by AIP and KIS staff
  -
- Data reduction
  - The AIP team partially reduced the data and further supports the data reduction and reconstruction