



Leibniz-Institut für  
Astrophysik Potsdam

*ISC proudly presents the:*  
**9th AIP Jamboree, Nov 17 2016**

*The rules of the game:*

- 2 minutes for 2 slides*
- Present yourself and your work*
- Get to know your colleagues*



**DRS → MAD → DRS → TXL → GRU → TXL**

**Vinyl aficionado. Deceleration defender. Slow scientist. Climber. Ex-Drummer. Ex-philosopher. & The stupid guy who has to organise this.**

**From the Very Near East .  
Likes mountains, sea, and the Sun.  
Also stars in general. And galaxies.**





# Current projects

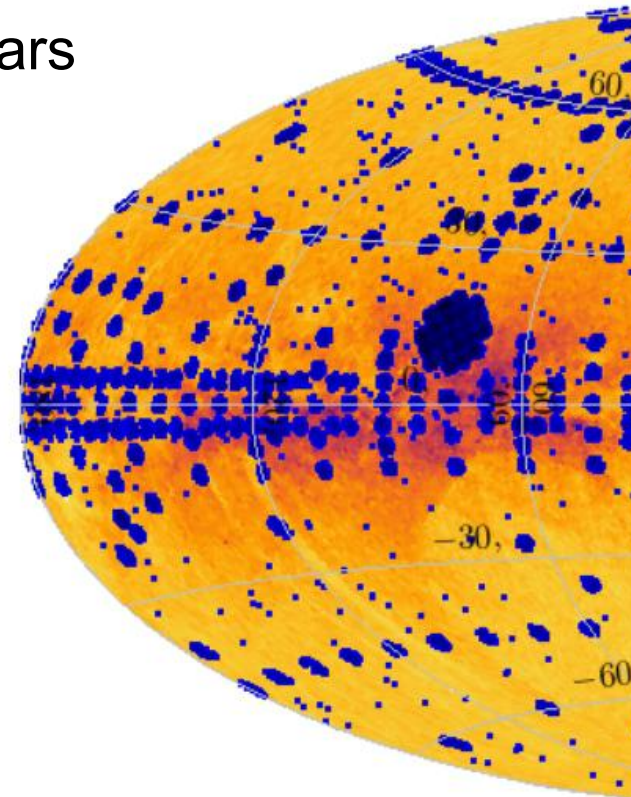
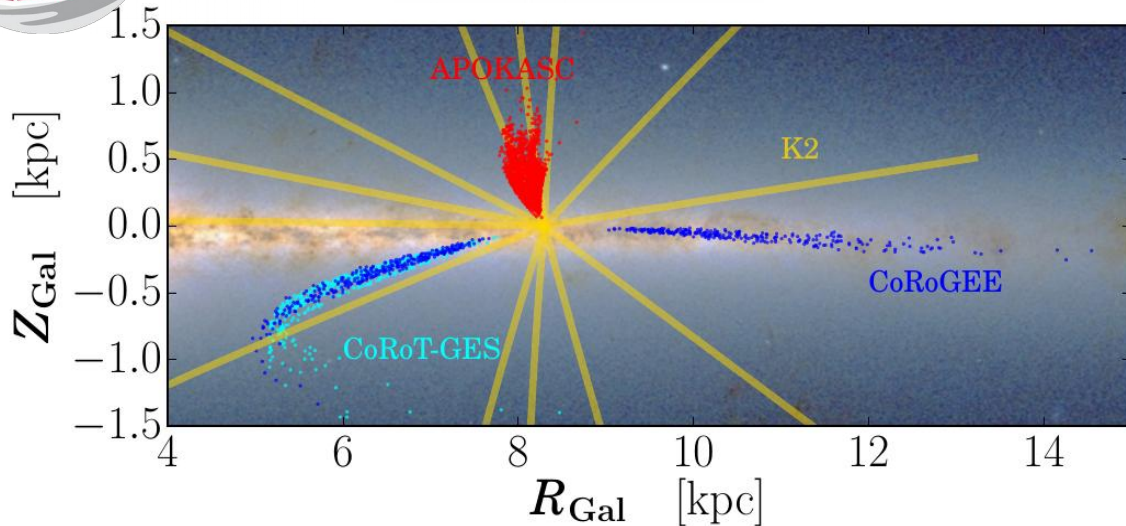
- CoRoT-APOGEE: Combining asteroseismology and spectroscopy
- Gaia-APOGEE: for the extended solar vicinity
- StarHorse: Distances and ages for field stars



gaia



SDSS



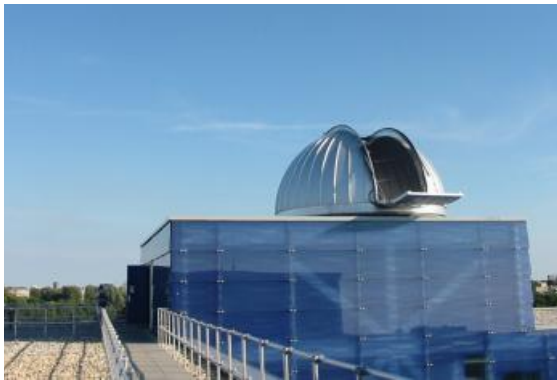
# Anke Arentsen

## Milky Way & Local Volume

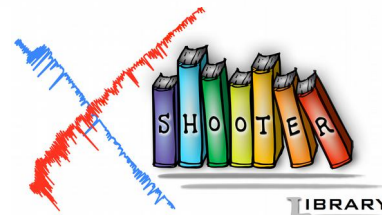
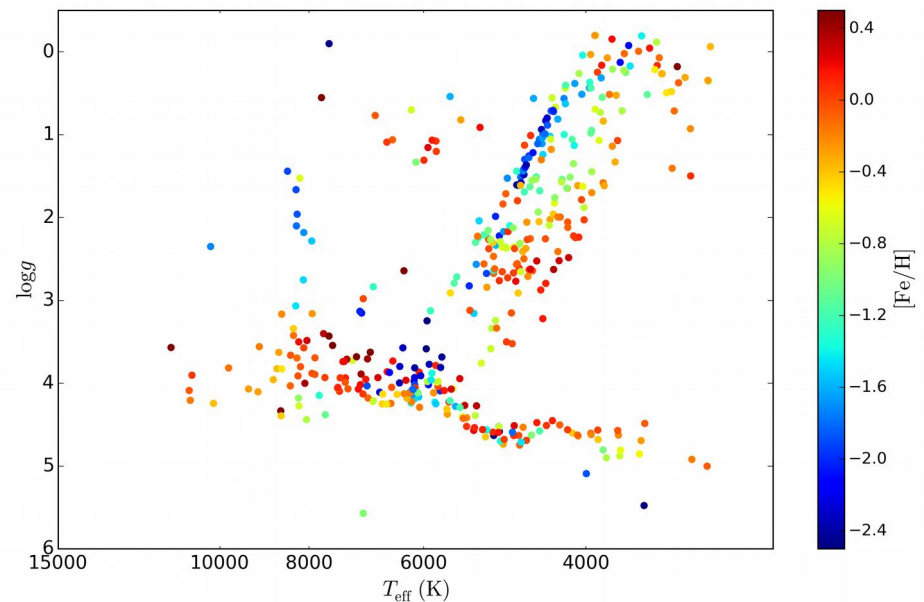


# Anke Arentsen / PhD student

Bachelor & master in  
**Groningen, NL**



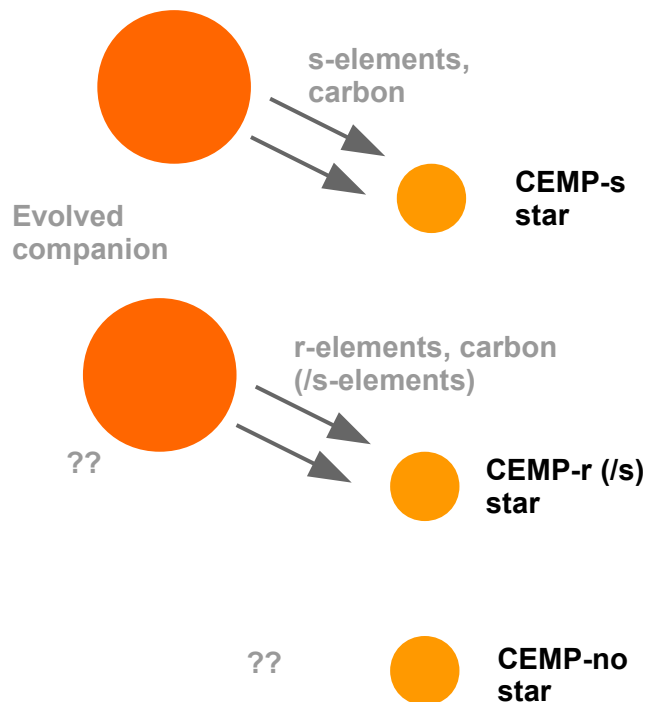
Master research project within  
**X-shooter Spectral Library**



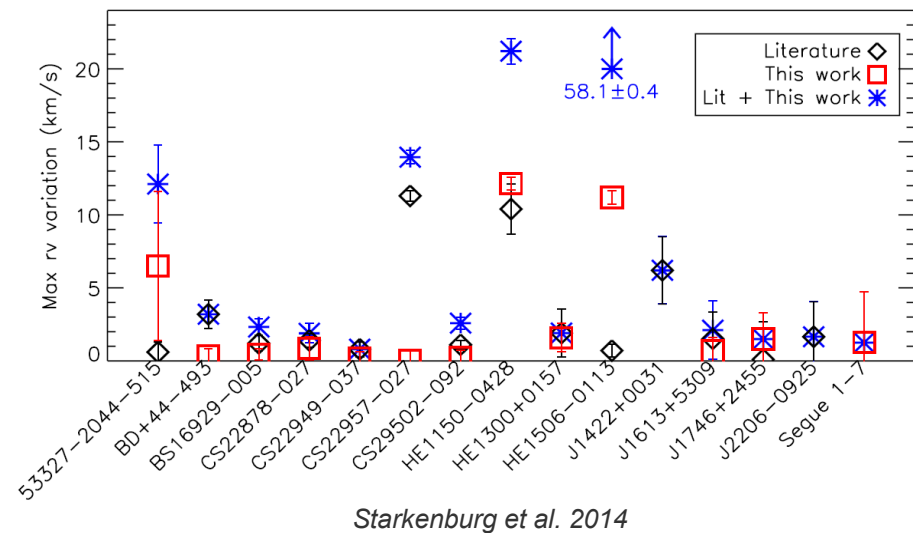
# Anke Arentsen / PhD student

Since October 1<sup>st</sup> working  
with **Else Starkenburg** in  
the Early Milky Way group

## Carbon-Enhanced Metal-Poor (CEMP) stars



*Radial velocity monitoring of CEMP-no stars*



Rainer Arlt  
MHD

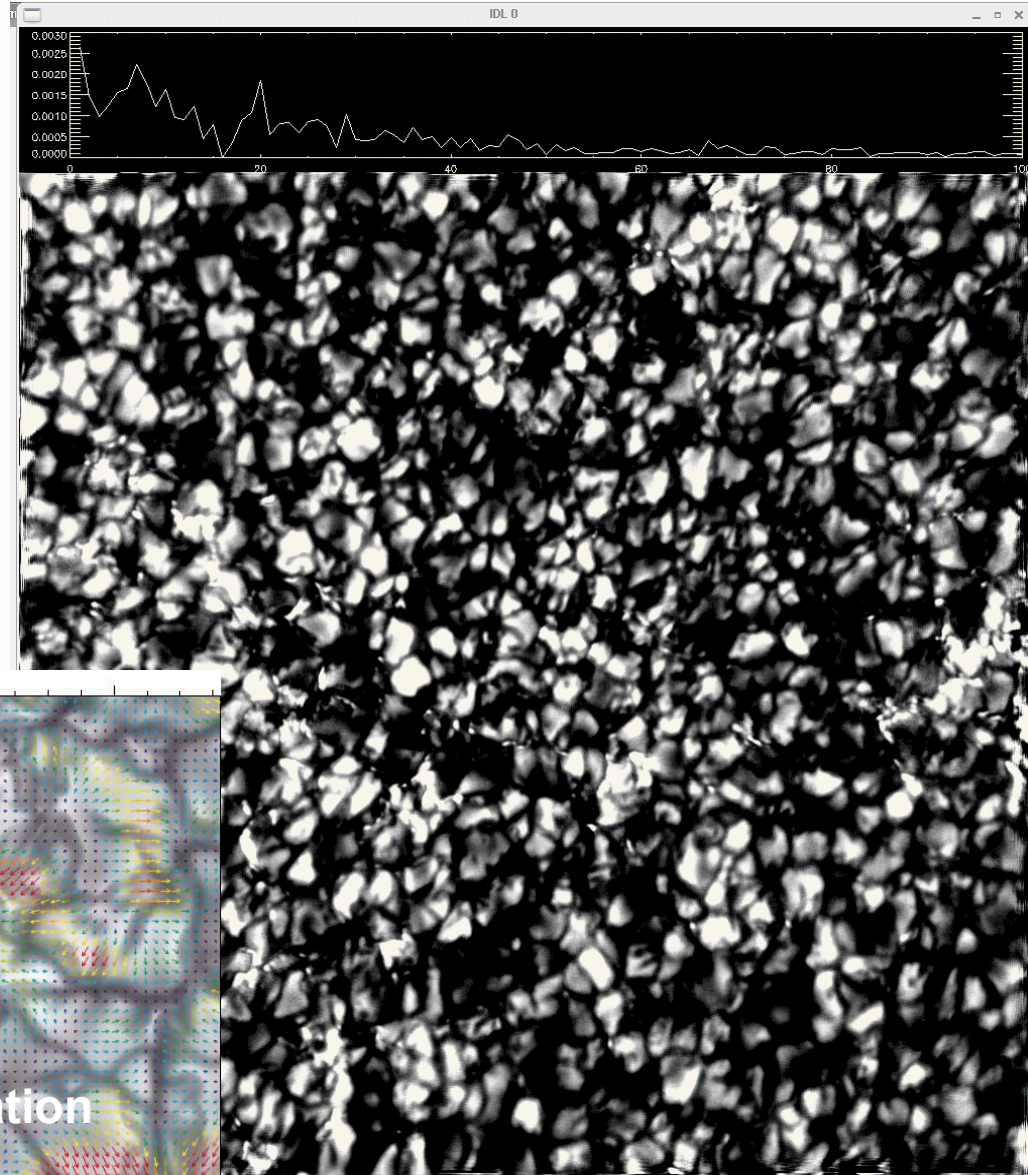


# Just an idea: magnetic diffusivity on the solar surface

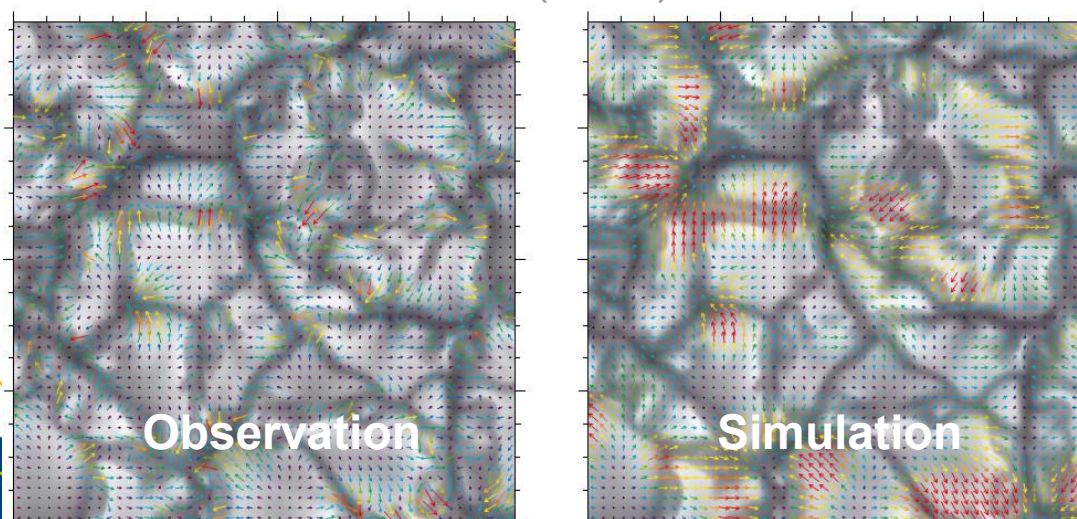
- Dynamo models depend on **turbulent magnetic diffusivity** in the Sun
- Is an uncertain quantity on the solar surface
- And essentially unknown in the solar interior
- How to compute the diffusivity on the quiet Sun?
- **Estimate by length-scale and typical velocity:  $\frac{1}{3} l \langle u' \rangle$**
- $\langle u' \rangle$  from local correlation tracking of brightness features on the solar surface
- Solar physics section: Meetu Verma, Andrea Diercke → 0.67 km/s

# Quiet-sun image made with GREGOR

- Spectrum: 20 x 20 convection cells in image
- Turbulent magnetic diffusivity:  $\sim 10^{13} \text{ cm}^2/\text{s}$
- But see below:



Verma, Steffen, Denker (2013)





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Astrophysik Potsdam

# Metin Ata

## PhD Student

## Cosmology







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# Metin Ata

## PhD Student

## Cosmology



Research Interests:



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# Metin Ata

## PhD Student

## Cosmology



- Cosmic Structure formation

Research Interests:



Leibniz-Institut für  
Astrophysik Potsdam



# Metin Ata

## PhD Student

## Cosmology

Research Interests:

- **Cosmic Structure formation**
- **Astrostatistics**
  - **MCMC Methods**
  - **Machine Learning**





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# Metin Ata

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- **Astro-particle stuff**



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# Metin Ata

## PhD Student

## Cosmology

Research Interests:

- Cosmic Structure formation
- Astrostatistics
  - MCMC Methods
  - Machine Learning
- Astro-particle stuff



Code:  
C++  
>>Python<<



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# Metin Ata

## PhD Student

## Cosmology

Research Interests:

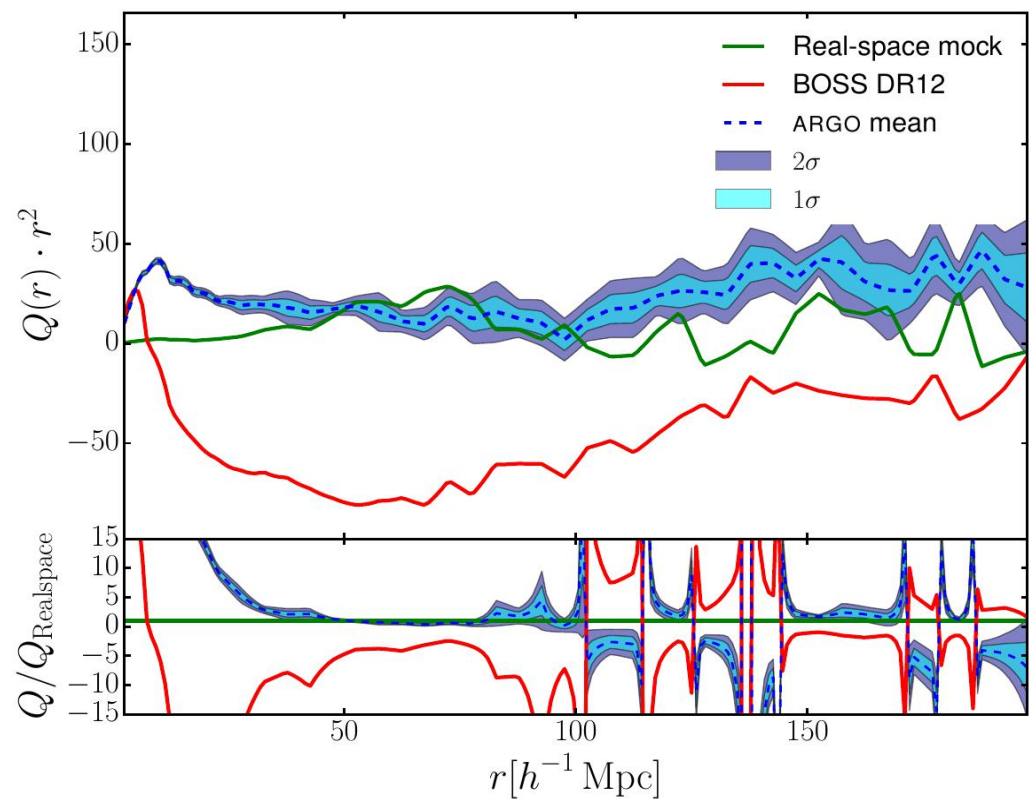
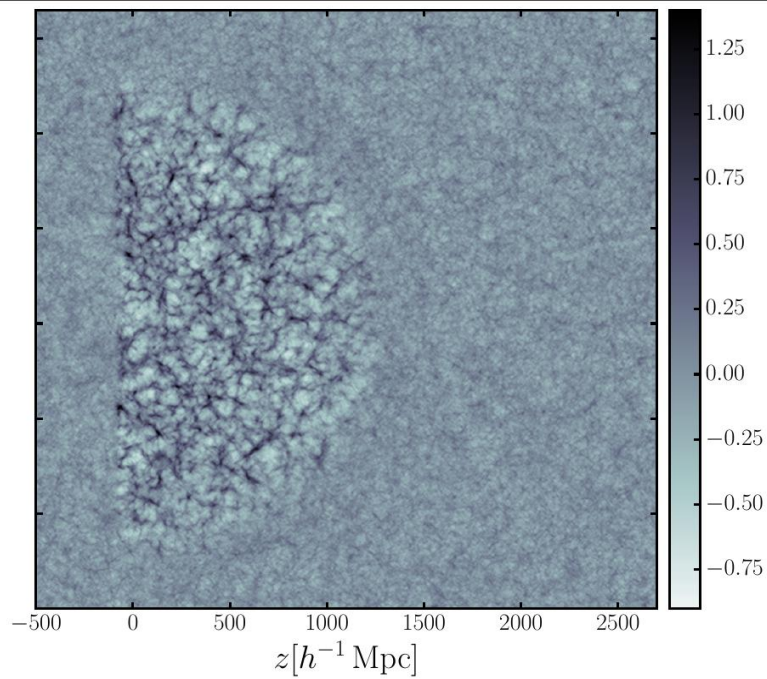
- Cosmic Structure formation
- Astrostatistics
  - MCMC Methods
  - Machine Learning
- Astro-particle stuff



Code:  
C++  
>>Python<<

In 4 yrs: Work on reconstruction of dark matter density:  
arXiv:1406.7796, arXiv:1408.2566, arXiv:1507.08724, arXiv:1605.09745,  
arXiv:1607.03155







## Degree in Particle Physics, Aachen/Cern





# Degree in Particle Physics, Aachen/Cern

## Citations Summary

511 papers found, 511 of them citeable (published or arXiv)

	Citeable papers	Published only
<b>Number of papers analyzed:</b>	511	497
<b>Number of citations:</b>	48452	48368
<b>Citations per paper (average):</b>	94.8	97.3
<b><math>h_{\text{HEP}}</math> index [?]</b>	111	111





## Likes:

- Most kinds of food (but parsley)
- Most kinds of sports (never tried golf)





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## **Likes:**

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## **Plans:**

- **Annual Ice skating FUN (for most)**



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## **Likes:**

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- **Most kinds of sports (never tried golf)**

## **Plans:**

- **Annual Ice skating FUN (for most)**

**If anyone is up to something, let me know**

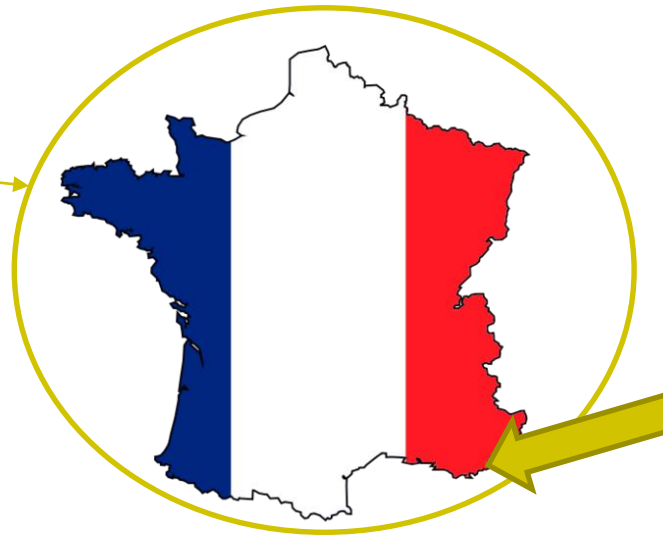
- **Paintball, Lasertag...**





Nicolas Azais  
4MOST

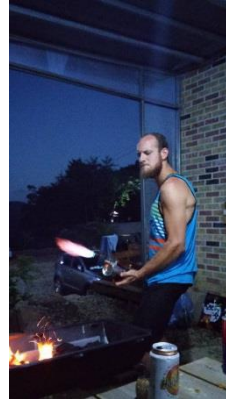
# Where I'm from



Toulon

## Academic background

- Optical engineer diploma
- MSc in Entrepreneurship
- Internships
  - World Bank - Madagascar
  - MxOphtalmic - Paris
  - Horiba Ltd - Japan

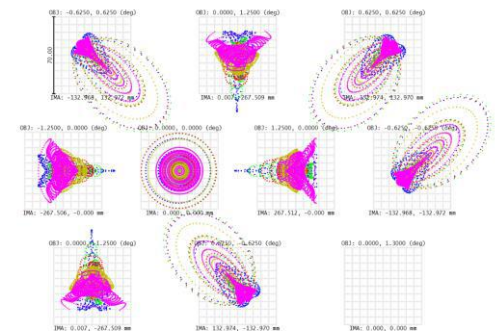
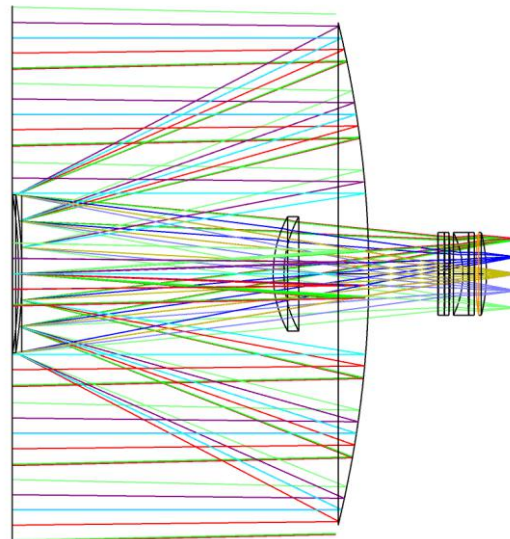


# Summary at AIP:

- ❖ Arrived in November 2015
- ❖ Work for the Technical Section as Optical engineer
- ❖ Full time on 4MOST project - W.P.6.2. - Wide Field Corrector

# For 4MOST:

- ❖ Optical Analysis with Zemax
  - ❖ Aberrations
  - ❖ Tolerancing
  - ❖ Ghosts, stray light
- ❖ System modeling with Python and Zemax.





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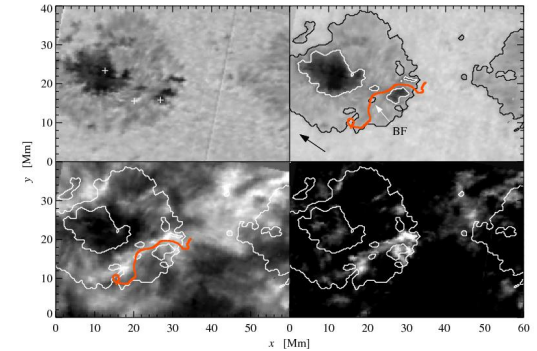
# Horst Balthasar

**Physics of the Sun - Optical solar physics  
(senior researcher)**

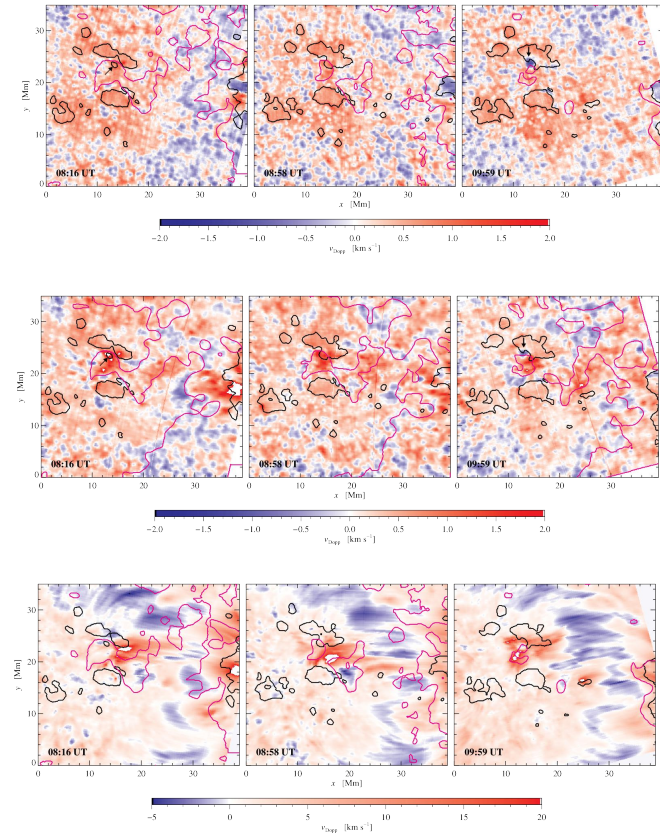
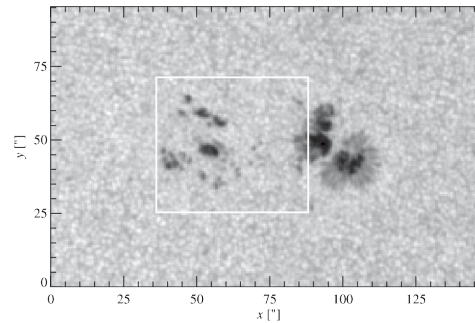
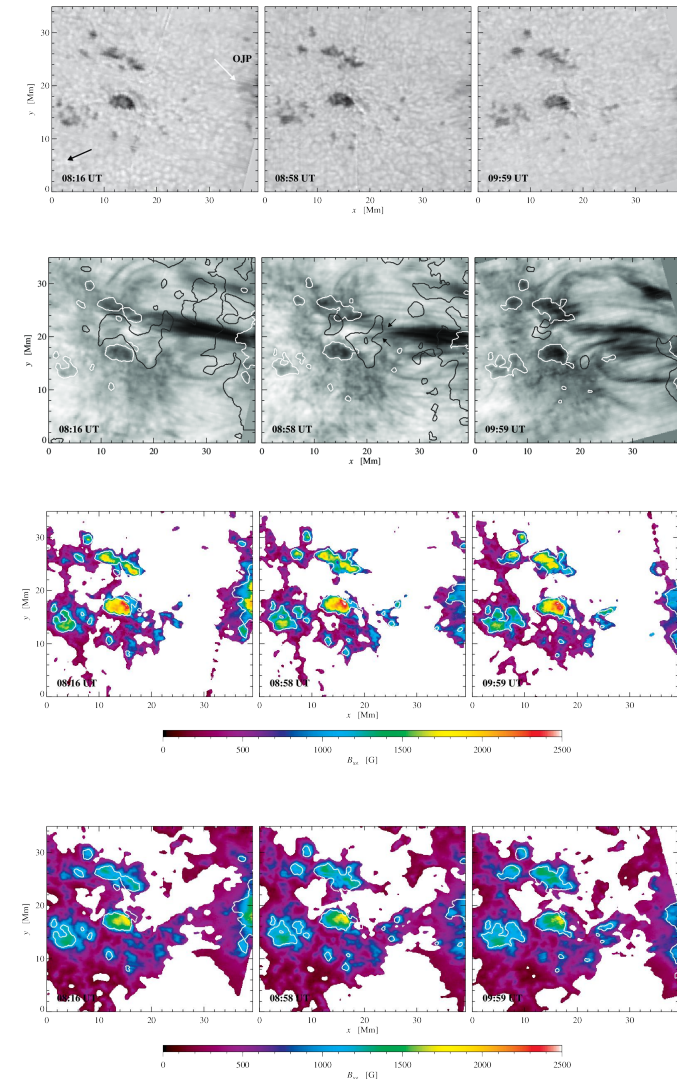


# Who I am

- Studies: University of Göttingen
- Diploma: 1979, PhD: 1984
- Postdoc stations: IAC Tenerife, Uni. Göttingen
- Deputy professorship for mathematics  
FH Wiesbaden (now HS Rhein-Main) 1991
- KIS Freiburg 1992 -1996
- since 1997 at AIP (optical solar group)
- **Scientific Interests:**
- **Measurements of magnetic fields on the Sun (sunspots, pores, filaments,...)**
- **Instrumental polarization of the GREGOR-telescope**
- **Differential rotation of the Sun**
- **Solar granulation**



# Magnetic field and velocities in an Arch Filament System



Observed May 25, 2015 with the GREGOR-telescope  
 Polarimetry in NIR: Si I 1082.7nm, He I 1083.0nm, Ca I 1083.9nm  
 Inversion of the Stokes profiles, e.g. SIR-code  
 Balthasar et al., AN 337, 1050 (2016); Proc. SPW8

# Sam Barden

## 4MOST



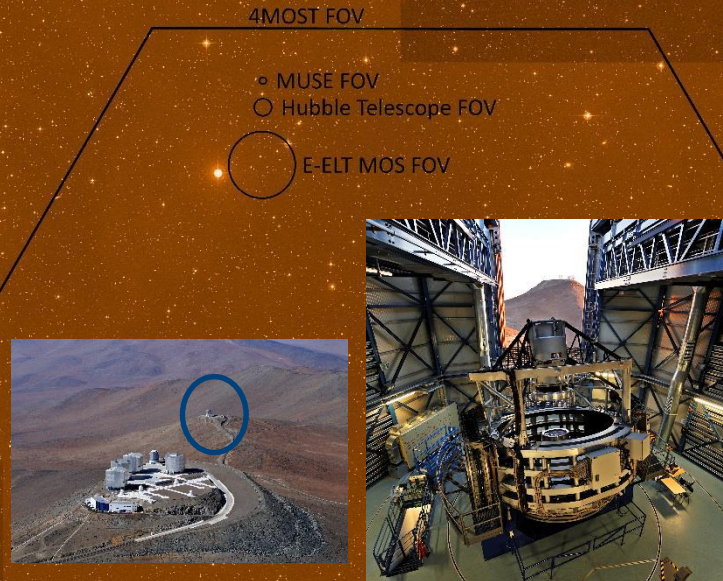
# Sam Barden – Started January 2014 at AIP

## 4MOST WP6.2 Work Package

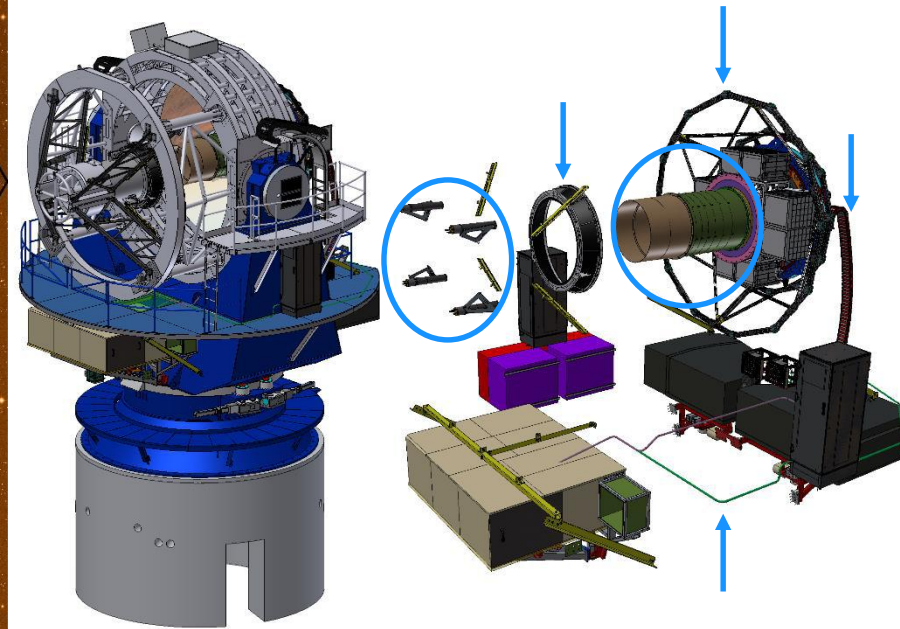
### Manager/Engineer

Wide Field Corrector,  
Acquisition, Guiding and Wavefront Sensing,  
Fiber Feed, Spectrograph Slit, Shutter,  
Metrology, Commissioning Test Tools,  
Telescope Modifications

Team – Nicolas Azias, Thomas Fechner,  
Dionne Haynes, Roger Haynes, Andreas Kelz,  
Allar Saviauk, Greg Smith, Roland Winkler

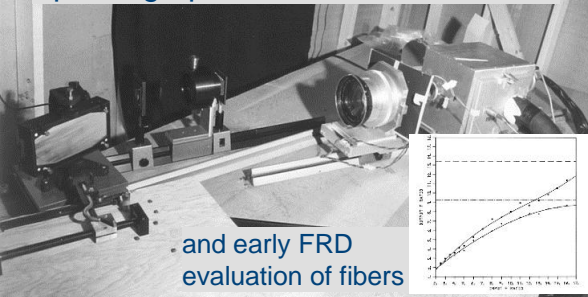


2.5 degree FOV  
2400 fibers –  
1600 Low Res  
800 High Res



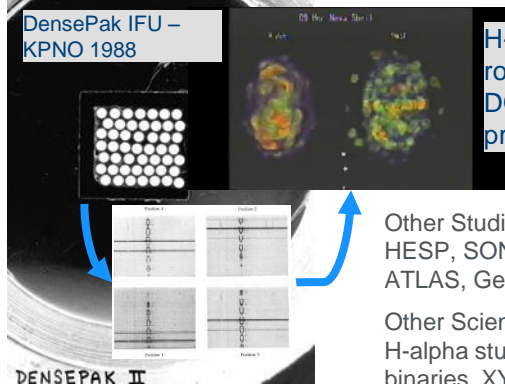


## First Bench Mounted Fiber-Coupled Spectrograph – Penn State 1980



and early FRD evaluation of fibers

## DensePak IFU – KPNO 1988

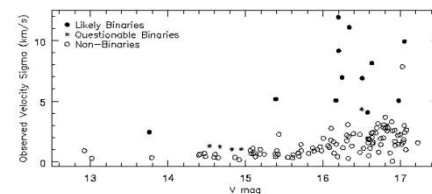


H-alpha and [NII] rotating movie of DQ Her Nova shell produced by Pixar

Other Studies and Concepts:  
HESP, SONG, ELT studies, NOGS, ATLAS, Gemini f/6

Other Science:  
H-alpha studies of RS CVn binaries, XY Leo, DH Leo

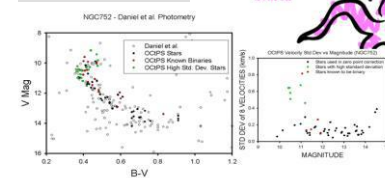
## Search for binaries in Globular Cluster M17 with Nessie and Hydra – NOAO 1993



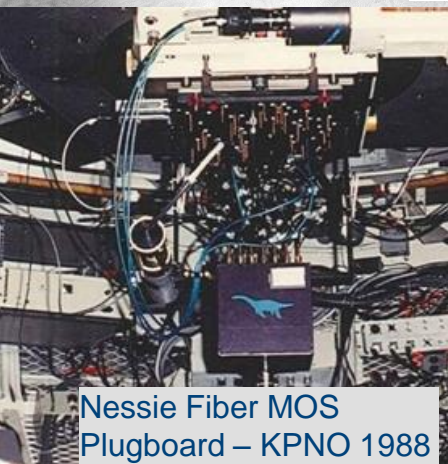
## Search for Low-Amplitude Stellar Motions in NGC752

Hydra project – NOAO 1998

OCIPS: Open Cluster Planet Search



Instruments and some science worked on during my career at Penn State, NOAO, AAO, and NSO before joining the AIP

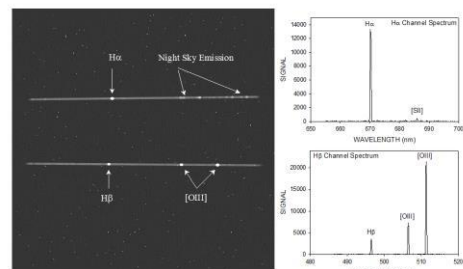


Nessie Fiber MOS Plugboard – KPNO 1988

Hydra-WIYN (1995)  
Hydra-CTIO (1999)

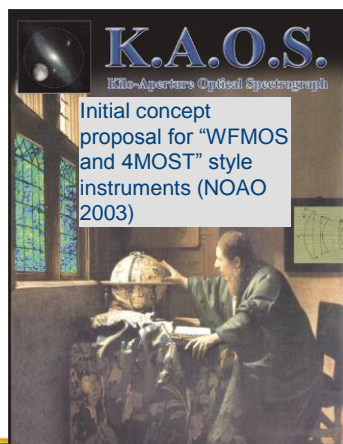


Original fiber cables still in use after 21 years.

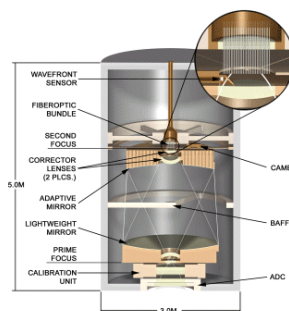


First astronomical spectrum with a VPH grating – KPNO 1988.

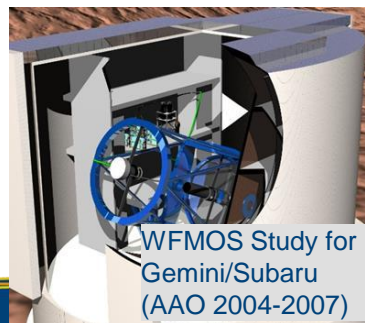
VPH Gratings now used in most modern astronomical optical spectrographs (e.g. MUSE, Hetdex, HERMES, 4MOST...)



Initial concept proposal for "WFOS and 4MOST" style instruments (NOAO 2003)

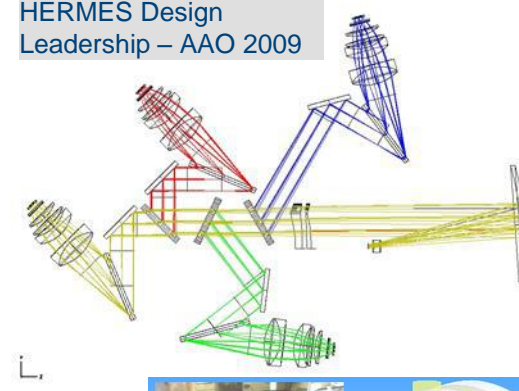


MOMFOS concept for 30-meter GSMT (NOAO 2002)

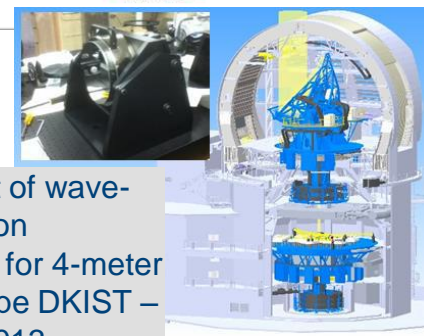


WFOS Study for Gemini/Subaru (AAO 2004-2007)

## HERMES Design Leadership – AAO 2009



Management of wave-front correction development for 4-meter solar telescope DKIST – NSO 2010-2013





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# Sydney A. Barnes

(Stellar Physics & Activity, HH 111)

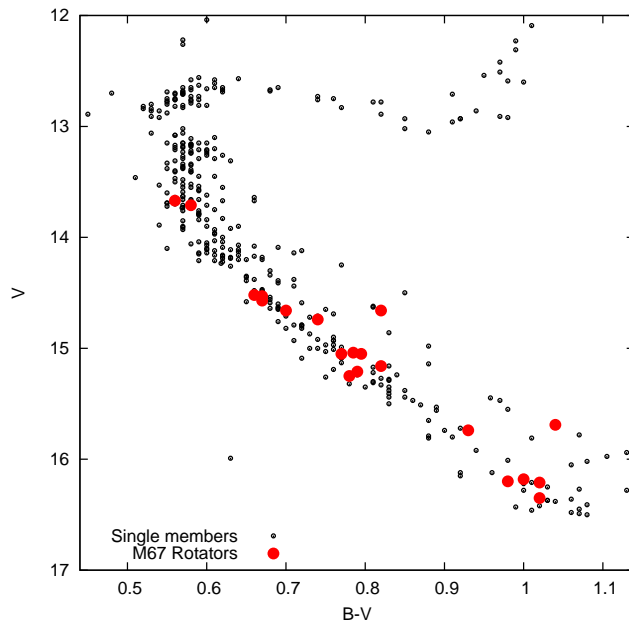
**Main AIP collaborators: Joerg Weingrill, Thomas Granzer,  
Federico Spada, Dario Fritzewski, Klaus Strassmeier**

# Principal research interest: Understanding the rotation of cool stars

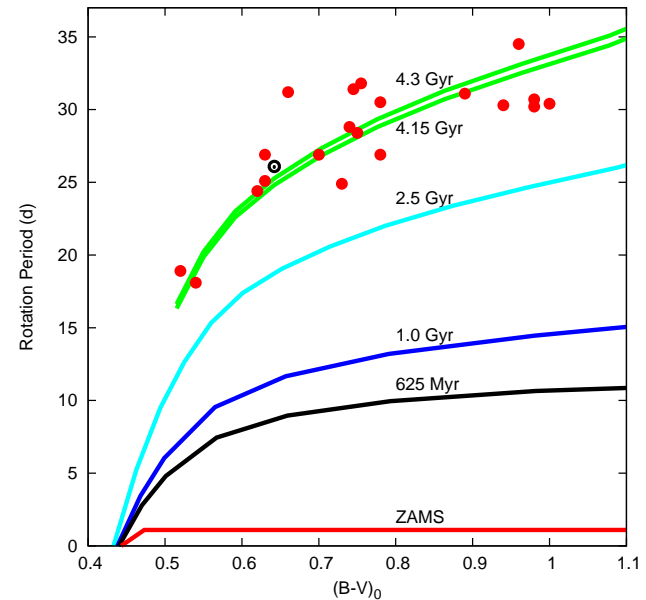
$$P = P(t, M, \dots)$$

$$\{ \implies t = t(P, M, \dots) \}$$

## CMD of M67



## CPD of M67



e.g. Barnes, Weingrill, Fritzewski, Strassmeier, Platais 2016



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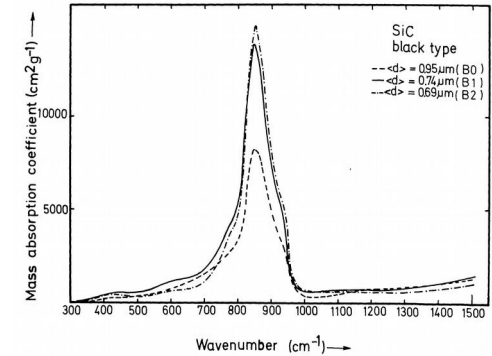
# Regina von Berlepsch

## Library



# My background

- 1975: study Friedrich-Schiller University Jena, physics
- 1977: University Observatory Jena
- 1980: Diploma in physics (Suppositions for the Comparison of Infrared Spectra from Terrestrial Silicates with Interstellar Spectra and the Selection of Suitable Silicates)
- 1980-1991: ZIAP Potsdam (Dwarf galaxies in the M81/82 group)
- 1992-30.04.2022: AIP, Library



Astronomische Gesellschaft  
German Astronomical Society

Secretary Astronomische Gesellschaft

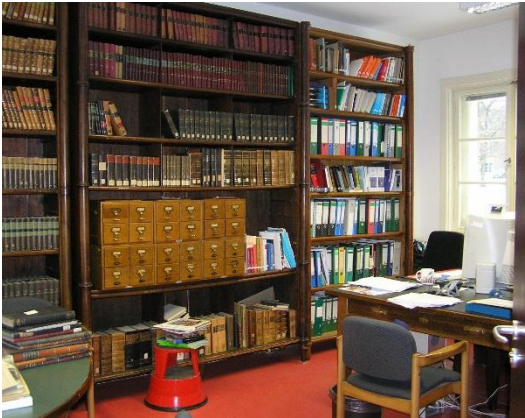
Library and Information Services in Astronomy (LISA)

Member of the working group of libraries and information facilities of the Leibniz Association

Working Group for the History of Astronomy



# Our services (together with Marcel Thies)




- subscription of ca. 6,300 online journals
- physical collection consists of:
  - more than 90.000 print volumes (including maps and limited editions)
  - historical documents
  - photo plates
  - a considerable collection of images
  - Electronic inventory database



- responsible for scientific information and literature supply
- efficiently providing advanced research services tailored to the needs of its users
- offering a wide range of digital and conventional services
  - document delivery
  - acquisition of requested literature
  - expert advice
  - historical investigation
  - digitalization on demand

- guidances
- organizer of exhibitions

Datensatz-ID: 54bc0113a3d35d27a8b4568	
Verknüpfte Datensätze: Benutzt von: Hermann Carl Vogel Verwendet an: Ehemaliges Hauptkabinett des AOP	
Bilder:  Durchsuchen: Keine Daten ausgewählt. Bild hochladen	
PDF's: Durchsuchen: Keine Daten ausgewählt. PDF hochladen	
Spektrograph: Inventar Nummer: 020 Alle Inventarnummern: <input type="text"/> <input type="text"/> Nummer 1: 03774 Nummer 2: S.102/23A Nummer 3: S.102/17A Nummer 4: 000031 Bezeichnung: Virginia Spektrograph Standort: 37.11.1914 Beschreibung: <input type="text"/> Baujahr: 1874 Hersteller: Schenck und Haensch Sonstige Eigenschaften: (In das erste Feld den Namen der Eigenschaft, in das zweite den Wert) Verknüpfte Datensätze: Benutzt von: <input type="text"/> 54bc0113a3d35d27a8b4568 Verwendet an: <input type="text"/> 54bc22584c3d35d27a8b4567 Änderungen speichern	

At the moment we are working hard to create space for two workrooms, but as you can see we have experience.







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# Ekaterina I. Dineva

## Solar Optical



# About me: from Radio to Optical

Currently a PhD student at UP and AIP Optical  
Solar Physics Group

supervisor: apl. Prof. Dr. Carsten Denker

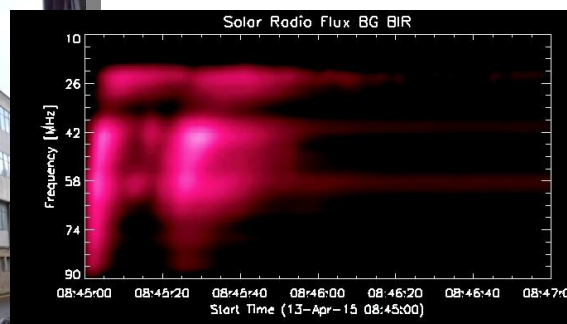
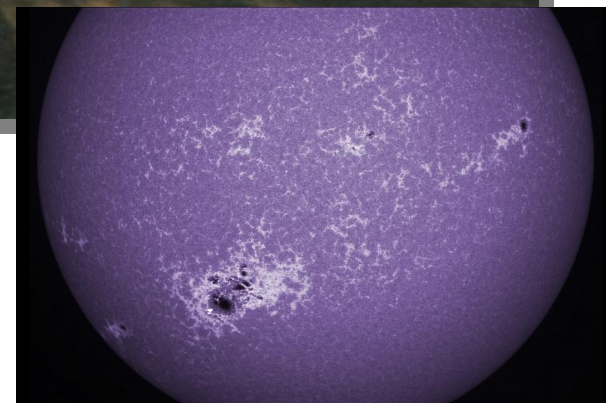
A bit of prehistory:

- B. Sc. - Sofia University “ St. Kliment Ohridski”,  
specialty: AMG

Thesis: “Cosmic distance scale with Cepheid  
variable stars”

- M. Sc. - Astrophysics at University of Glasgow

Thesis: “Radio emissions from solar flares with  
e-Callisto”



# Sun-as-a-star Spectroscopy with PEPSI

- Data: PEPSI/SDI
- Aims: identify signatures of solar activity and rotation in the Sun-as-a-star spectra → match them to features observed in solar full-disk images, magnetograms and dopplergrams
- Methods:
  - 1) individual spectra – search for transient features (flares)
  - 2) Sunspots in photospheric lines and bright plages in Ca II H & K – rotational modulation
  - 3) Cloud modeling of strong chromospheric absorption lines
- Additional data : ChroTel, SDO, SOLIS/ISS



Fadil Inceoglu  
MHD

# Background

- **BSc** – Department of Astronomy and Space Sciences – Ege University – Turkey
- **MSc** – Institute of Nuclear Sciences – Ege University – Turkey : Using radioactive isotopes ( $^{210}\text{Pb}$ ,  $^{137}\text{Cs}$ ,  $^7\text{Be}$ ,  $^{222}\text{Rn}$ ,  $^{230}\text{Th}$ , etc...) in Environmental and Earth sciences.
- **PhD** – Departments of Physics and Astronomy & Geoscience – Aarhus University – Denmark : Investigating Decadal- to Millennial-scale Solar Variability Based on Instrumental Observations and Cosmogenic Nuclides
- **Postdoc** - Department of Geoscience – Aarhus University – Denmark : Focus on climate (paleo/common era) & solar activity





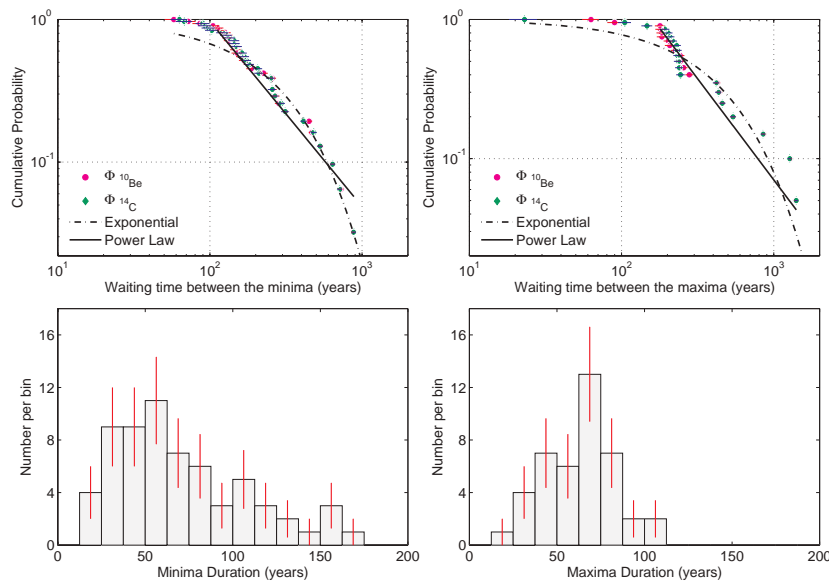
# Carlsberg Foundation Internationalization Postdoctoral Fellow



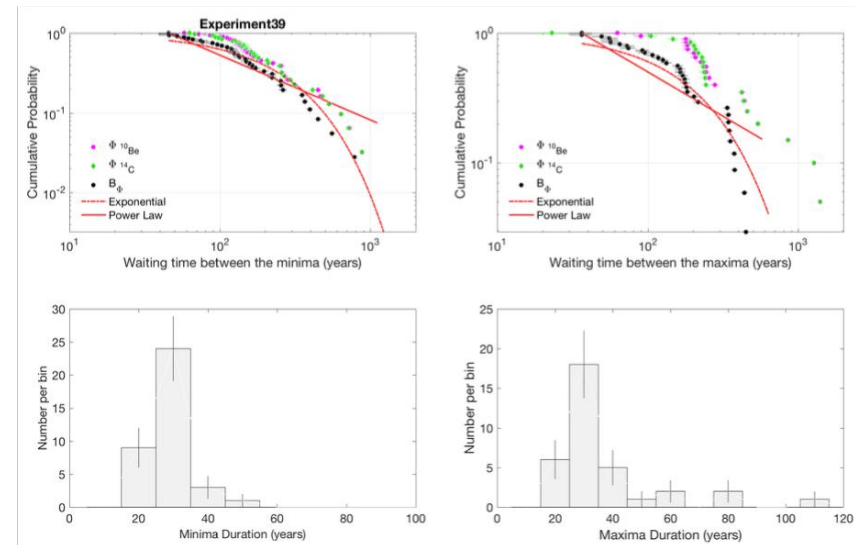
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## Understanding the Solar – Terrestrial Relationship

Observations from  $^{10}\text{Be}$   
and  $^{14}\text{C}$  show:



One of the simulations from  
the HAO-Dynamo Code  
(Rempel, 2005, 2006)  
show:





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# In Sung Jang

## Milky Way and the Local Volume

# In Sung Jang (Postdoc)

## 1. From South Korea



## 2. Born in 17 Nov 1986



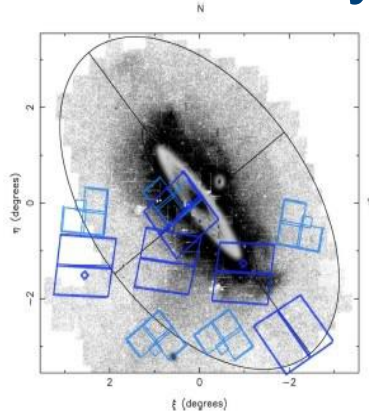
## 3. PhD. From Seoul National Univ



## 4. Observational Astronomer!



# 1. Stellar Population of Nearby Galaxies

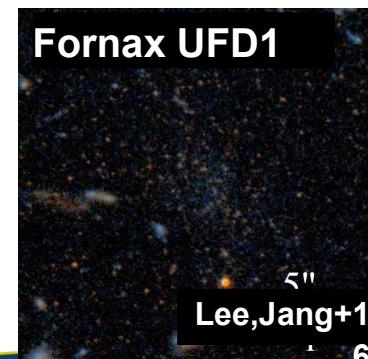
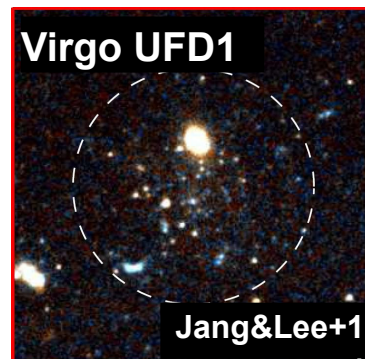
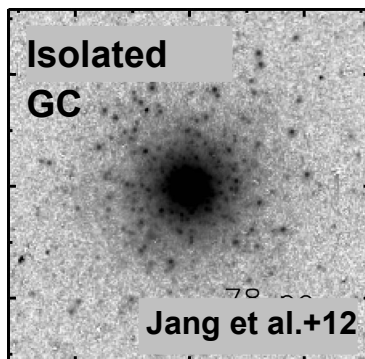


## 2. Distance Scale of the Universe



- 3.4% of  $H_0$  (Ph.D Thesis)
- 2% of  $H_0$  (Carnegie Hubble Program)

## 3. Discovery of New Stellar Systems







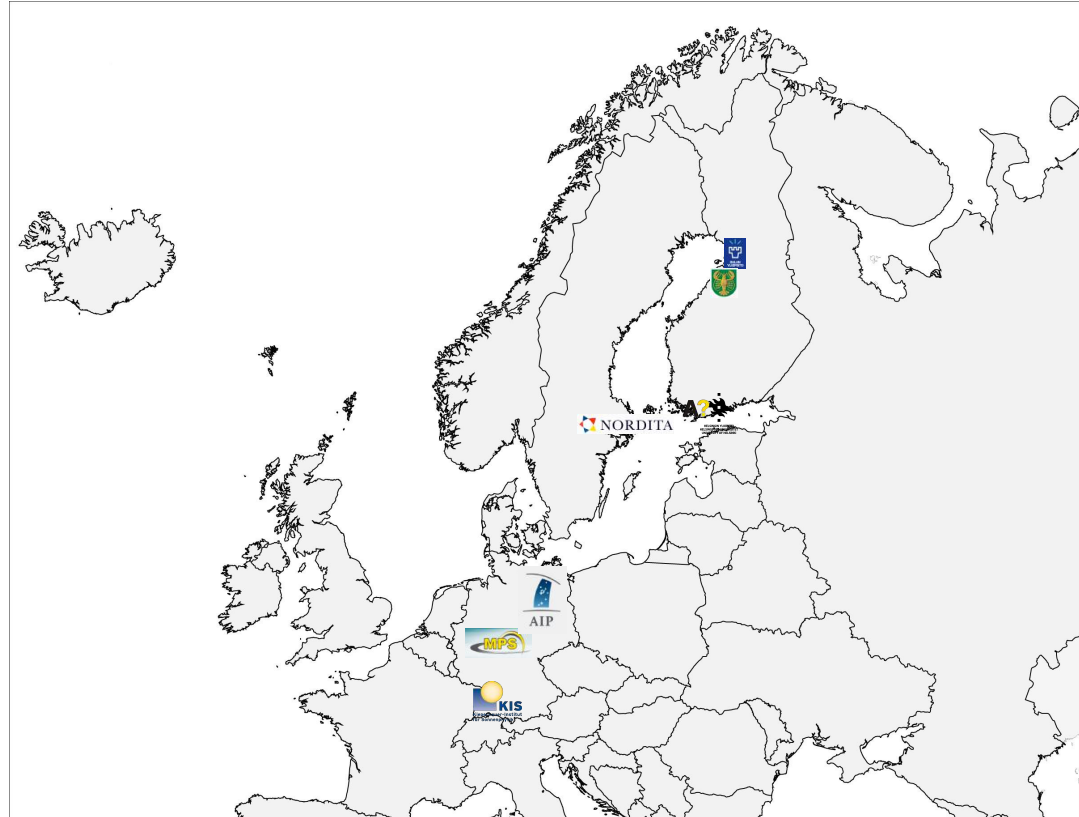
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# Petri Käpylä

## MHD and Turbulence

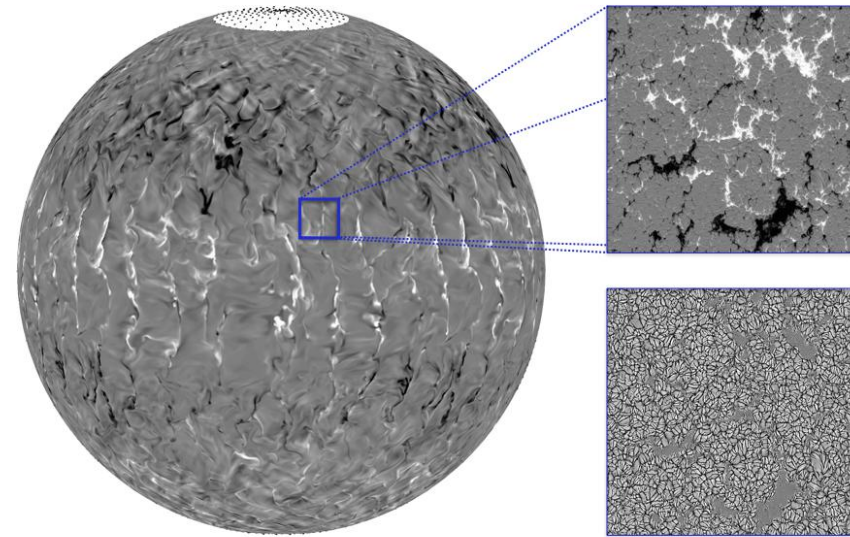
# Petri Käpylä (AIP, MPS, Aalto)

- Oulainen 1978-1997
- MSc 2001 (Oulu)
- Freiburg 2002-06
- PhD 2006 (Helsinki)
- NORDITA 2006-07
- Helsinki 2008-2015
- Aalto 2015-
- AIP 2016-
- Time-killing devices:

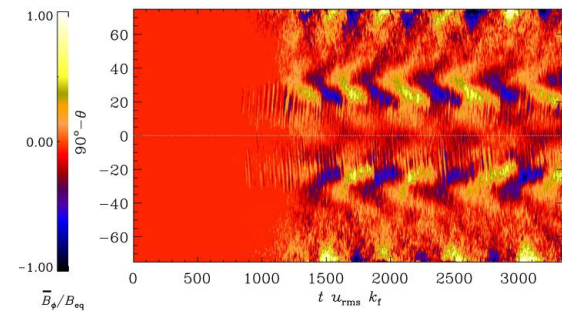
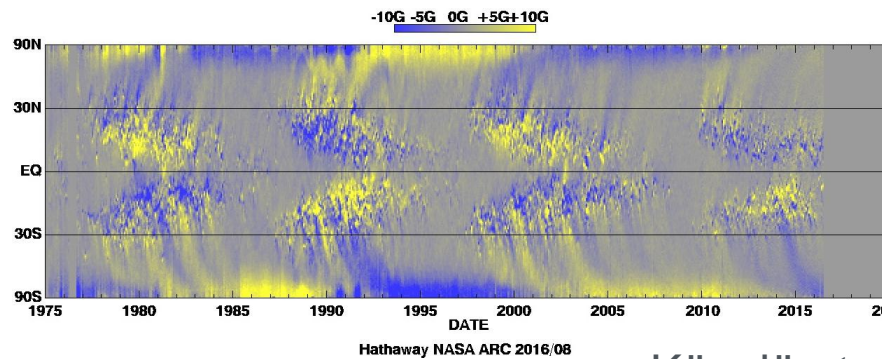


# Solar and stellar dynamos and spot formation

Primary tool:



Käpylä et al. (2016), A&A, 588, A150



Käpylä et al. (2012), ApJL, 755, L22

# Martin Lüders

## Cosmology



# Martin Lüders

Born in Potsdam

„Schülerpraktikant“ at AIP

Abitur in Cottbus

Bachelor and Master at HU Berlin

PhD-Student at AIP



# Research

HU Berlin

Titel of master thesis:

„Linear polynomial reduction for Feynman integrals“

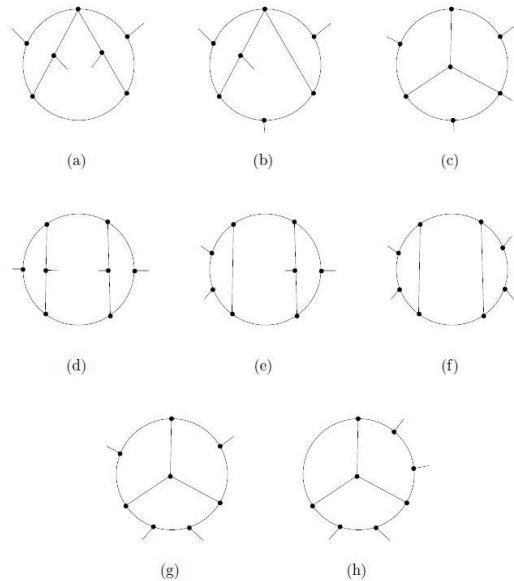


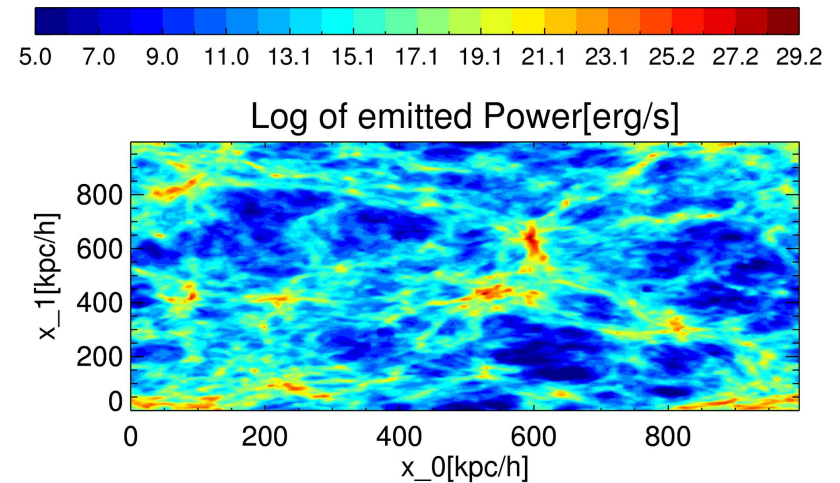
Figure 7.1: Not linearly reducible graphs

AIP

Numerical simulation of primordial  
structure formation

First project:

Molecular cooling signal at  
redshift  $\approx 20$



# Kasper Borello Schmidt

## Galaxies

# Kasper B. Schmidt

 **M.Sc.:**  
2003 — 2008



Dark Cosmology Centre

DM dynamics

 **Ph.D.:**  
2008 — 2012



QSO Variability

 **PDR:**  
2012 — 2015



LBGs & LAEs  
at  $z > 6$

 **PDR:**  
2015 — ...



Leibniz-Institut für  
Astrophysik Potsdam  
Galaxies & Quasars Group

LAEs at  $z > 2$





# GLASS

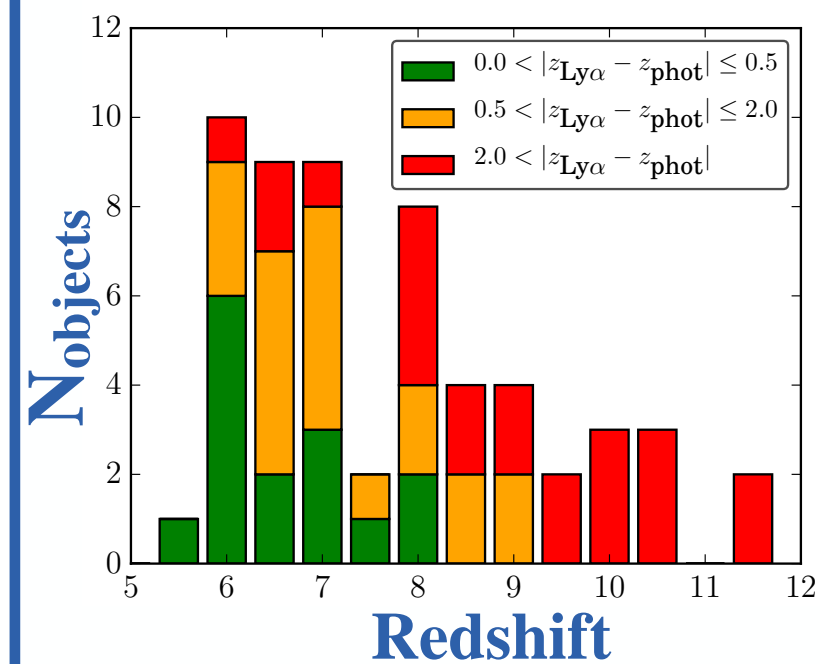
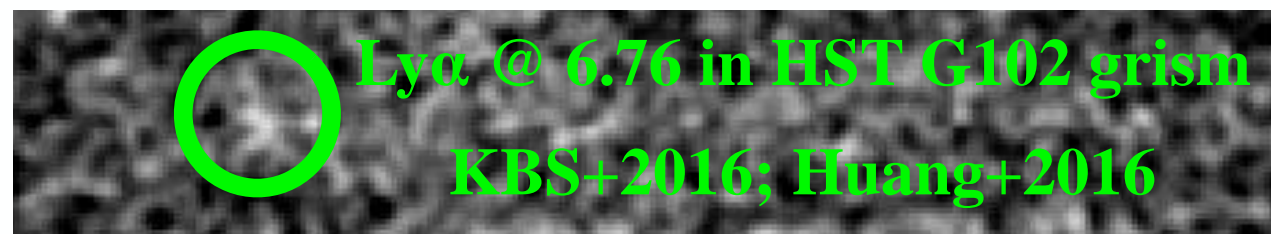
<http://glass.astro.ucla.edu/>

## Grism Spectroscopy

NIR ( $\sim 0.8\text{--}1.7\ \mu\text{m}$ )

Space-Based (WFC3 @ HST)

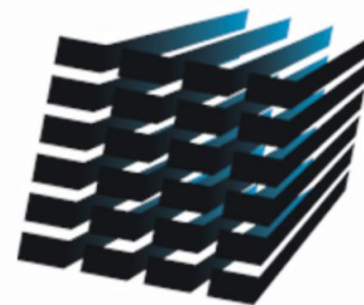
## Census of LAEs at $z > 5.5$



LAE/LBG sample:

- Census...
- EoR inference
- Follow-up prep.
- ...

KBS+in prep.



# MUSE

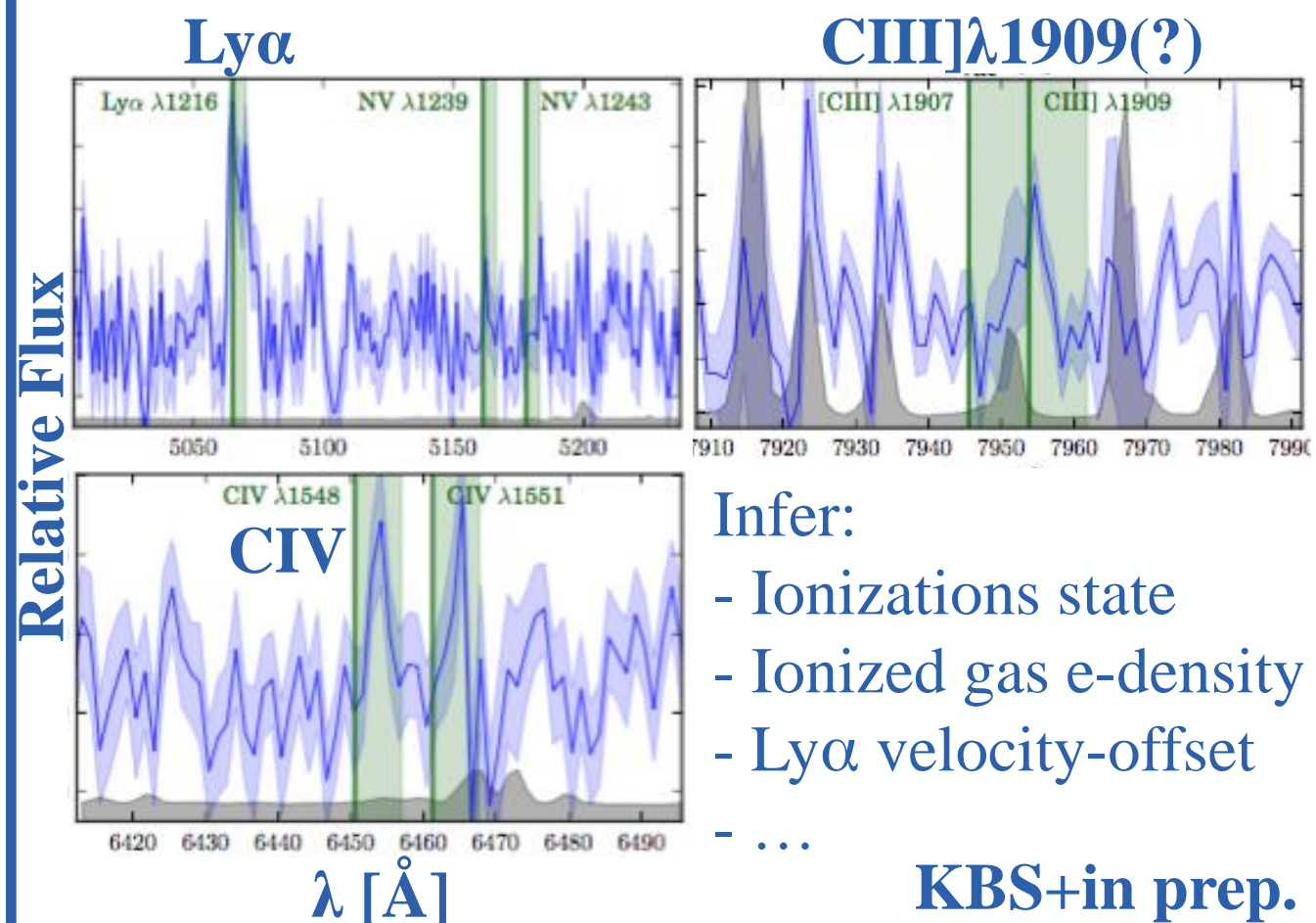
Herenz et al. in prep.

## IFU Spectroscopy

Optical ( $\sim 0.5\text{--}0.9\ \mu\text{m}$ )

Ground-Based (MUSE @ VLT)

## LAE UV lines at $z > 2.8$





Leibniz-Institut für  
Astrophysik Potsdam

**Greg Smith**

Forschungstechnik

- on secondment to 4MOST project

Responsible for:

Mechanical and optomechanical design of

- Wide Field Corrector (for VISTA telescope)
- Technical cameras (acquisition & guidance  
and wavefront sensor)

## At Australian Astronomical Observatory:

**HERMES Spectrograph** (four channel, VPH echelles)

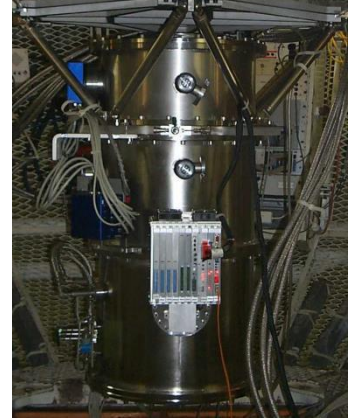
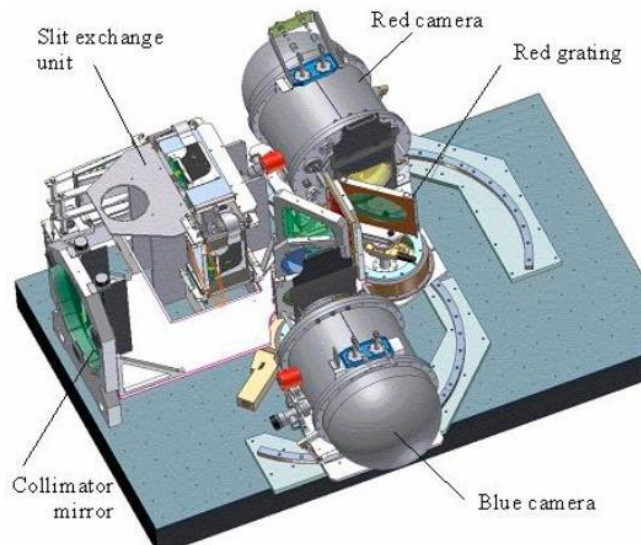
**AAOmega spectrograph**

(two channel, reconfigurable, exchangeable VPH gratings and beamsplitter)

**IRIS2** (Infrared imager and spectrograph with MOS capability)

**Wide Field Corrector** (for Echidna on Subaru)

**2dF Robotic Fibre Positioner** (two exchangeable field plates each with 400 fibers)



## At AUSPACE:

**Endeavour** (small binocular UV telescope  
- Shuttle payload)

# Friedrich Anders

## Milky Way & Local Volume