

ISC proudly presents: 5. AIP-Jamboree, April 30, 2015

The rules of the game:

- 2 minutes (2 slides)
- Present yourself and your work
- Get to know the colleagues

Roelof de Jong Milky Way and Local Volume

Galaxy formation and evolution

Roelof de Jong

- PhD Groningen -> Durham -> Steward Obs. -> STScl -> AIP (July 2009)
- Head Milky Way and the Local Volume section
- We study any galaxy that can be resolved into stars
 PI GHOSTS & 4MOST

Galaxy Halos Outer Disks Substructure Thick Disks Star Clusters

4MOST – 4m Multi-Object Spectroscopic Telescope

Cosmology & Large Scale Structure (Euclid) Galaxy Evolution & Dark Matter High Energy Universe (eROSITA) Milky Way Formation & Evolution (Gaia) Exo-planet host stars (PLATO)

Open to anyone at the AIP!

rijksuniversiteit

groningen

CAMBRIDGE

www.4MOST.eu

Observatoire

ASTRON RAL Space

GEPI

























Spectrographs

Low-Res

Fibre

Fibre

Feed

Positioner

















VISTA telescope

High-Res Spectrograph







Christoph Kuckein Physics of the Sun, Optical Solar Physics Group



My way to AIP...

1. Born: Germany



AR 11748 2013/05/17 Hα SJ map 002





My work at AIP



Andrea Kunder Milky Way and Local Volume





Claude Ernest Mack III Stellar Physics

Investigating the relationship between the chemical composition of a host star and the architecture of its planetary system

Claude (Trey) Mack III, Simon S. Schuler, Keivan Stassun, Josh Pepper, Leslie Hebb



Are host stars with close-in giant planets more likely to be enriched with rocky elements?

As giant planets migrate inward, computer simulations show that they can kick inner rocky planets into the host star...



With literature values for the compositions of the Sun and the Earth, one can estimate how the ingestion of Earth-like material alters the abundances of Sun-like stars:



HD 20782 + HD 20781

Praesepe (Beehive Cluster)



Host stars in wide binaries and open clusters are special because they can be compared with stars of the same age from the same birth environment

Results are **limited by small-number statistics** but **enrichment likely** ~<0.02--0.03 dex, or the ingested material settles out of the photosphere.



Isha Pahwa Cosmology



i\$h@ (Post Doc in Cosmology Group)

<u>About me</u>

- > From Haryana (INDIA)
- > B.Sc. Physics (Haryana)
- > Masters and PhD (Delhi University and IUCAA, Pune)

Research Interests -

- > Large Scale Structure (LSS)
- > Numerical Simulations
- Structure Formation in the Universe
- Dark Energy

Also interested in -

- > Statistical Techniques for Cosmology
- > Primordial Non-gaussianity
- > Inflation
- > Morphology of LSS,
- Voids

and Novels, painting :)

....working more directly with Noam I. Libeskind Stefan Gottloeber @ AIP





Current Research

>Orientations of galaxies with the Large Scale Structure

(With N.Libeskind, S.Gottloeber, E.Tempel, Y.Hoffman)



> Simulations - CURIE (SPH)

> Real Data - ATLAS3D, 2Mass Redshift Survey >Galaxy color and halo concentration correlation - A model of Galactic conformity (With A.Paranjape, K.Kovac, W. Hartley)



Mock Galaxy Catalogues for this model

 Analytical formalism for including conformity in
 Halo Occupation
 Distribution framework

AIP-JAMBOREE

30-04-2015

Pouneh Saffari innoFSPEC



PhD in Photonics on fibre Bragg grating sensor & fibre laser system / Aston University UK Joined innoFSPEC / AIP since July 2012

Multinotch Fibre Bragg Grating Filters

Fabrication method

- UV Laser (244nm)– Phase Mask & Holographic Complex filter functions
- Fs Laser (800nm)– Point by Point & Phase Mask Simple filter functions



GNOSIS on-sky result

Complex filter function with 103 notchs Square notch ~200pm wide

Wavelength coverage 1.47 – 1.70µm Two gratings in series



30-04-2015 – Jamboree – Dr Pouneh Saffari

Optical filters in multicore fibre

Compact, simple & robust package Cost effective filters

Single simultaneous imprint of all cores Fast & uniform

PRAXIS: Next generation instrument

New optimised cooled optical train, incl. FBGs Minimal thermal background noise New low noise portable detector system Minimise instrument background noise





Christer Sandin 3D Spectroscopy



M: AGB-star theory, observations of PNe; p3d: fiber-fed data reduction



AIP 2003-

Observations of PN halos, XPNe, X-rays, ... Measuring the massloss evolution Using IFS



p3d: fiber-fed IFS data reduction general: "all" IFS/IFUs, free thru GPLv3

Instrumental & atmospheric scattered light – ubiquitous in faint photometry





Sandin, C. 2014, A&A, 567, A97 Sandin, C. 2015, A&A, in press

I question the existence of: halos, thick discs, hosts of BCGs, don't worry: more objects are affected...

Allar Saviauk Milky Way and the Local Volume

My Background

Education





Ernst-Abbe-Hochschule Jena University of Applied Sciences

Master of Science - Scientific Instrumentation

Work and Internships

VAISALA





ΟΚΜΕΤΙΟ





Leibniz-Institut für Astrophysik Potsdam

Hobbies





Mechanical Design of 4MOST





PotsPos Fibre Actuator





Spectrograph Slit Design



Elmar Schmälzlin Multiplex Raman Spectroscopy





Raman Spectra of Cancer Cells

Ralf-Dieter Scholz Milky Way and Local Volume

AIP JAMBOREE 2015 Ralf Scholz (MWLV) @ SH/205

Diploma 1982 MAO Kiew/Uni Kharkow







Dissertation A 1990

Zentralinstitut f. Astrophysik Potsdam (ZIAP)



Bestimmung absoluter Eigenbewegungen für den Anschluß des HIPPARCOS-Systems an ein Quasi-Inertialsystem und die Automatisierung der astrometrischen Messungen auf Tautenburger Schmidt-Platten

>70% of my refereed publications with proper motion in abstract !

AIP JAMBOREE 2015 Ralf Scholz (MWLV) @ SH/205 Search for and characterisation of nearby stars and brown dwarfs



Axel Schwope Galaxies



X-ray missions





XMM-Newton Survey Science Centre (1999) eROSITA (launch >Dec 2016) ATHENA (launch 2028/2029)

THE ASTROPHYSICS OF THE HOT AND ENERGETIC UNIVERSE

Europe's next generation X-RAY OBSERVATORY





(= / = =)

Jenny Sorce Cosmology

















Federico Spada Schwarzschild Fellow

Federico Spada - About me



Born in Siracusa (Sicily, Italy) At AIP since 2012 as Karl Schwarzschild Fellow MHD & Turbulence / Stellar Physics and Activity



Federico Spada - About my work

Theoretical stellar structure and evolution

- with "classical" input physics
- including rotation and magnetic fields



Office: "Villa Turbulenz", Room 31

Federico Stasyszyn MHD

MHD SPH Simulations



Vector Potential SPH MHD



 First Time Galaxy Cluster w/Cooling, Star Formation and MF!



Galaxy Application



0.04

0.06

Time [Gy]

0.08

0.00

0.02

0.10



Matthias Steffen Stellar physics

Matthias Steffen (stellar physics)

- Studied physics in Kiel (Unsöld school)
- PhD: A model atmosphere analysis of Procyon
- DFG fellow at NSO, Tucson, USA
- AIP staff member since 2001
- Ombudsman for good scientific practice
- Secretary AN Editorial Office

Expertise:

Numerical simulation of stellar convection

- realistic 3D stellar atmospheres
- high-resolution spectroscopy
- chemical (isotopic) abundances

Numerical models of Planetary nebulae

- structure & dynamical evolution
- X-ray emission
- magnetic fields





Current projects



3D stellar atmospheres + magnetic fields

Effect on spectroscopic abundances?

Waiting for the first high-resolution (R≈300000) solar-quality PEPSI spectrum of a metal-poor halo star ... crucial tests of 3D model atmospheres.

¹S ¹D ¹D⁰ ³S⁰ ³P ³D⁰ ³F ³G⁰ ⁵S⁰ ⁵P ⁵D⁰ ⁵F ⁵G⁰

Matthias Steinmetz Director

About me











1996-2002 Faculty





Science Interests













Marvin Stolz innoFSPEC



At the AIP

- joined innoFSPEC in 2011 as an officer for KTT
- development, implementation and professionalization of exploitation strategies (High-tech Strategy BMBF)

Background

- graduate degrees in business administration (Dipl.-Kfm.) and science communications and marketing (M.Sc.)
- co-founder of Colibri Photonics, a spin-off company from the University of Potsdam in 2010



Functions of AIP's (your) KTT office

Promotion and management of:

- transfer and innovation networks
- research projects in **cooperation** with research partners
- intellectual property: patents, licenses and external projects
- workshops for staff and externals
- collaborations with universities in education





Jesper Storm Robotics

Calibrating the extra-galactic distance scale with variable stars

Jesper Storm (MW & Local Volume and Robotics)

Why?

- Provide high precision local (SNIa based) measurement of the Hubble constant
- Investigate 'tension' between local H0 and Planck indirect estimates: New physics needed? (SH0ES: 74+-2km/s/Mpc, Planck 68+-1km/s/Mpc)
- How?
 - Determine precise LMC distance
 - Determine precisely the effect of metallicity on the Cepheid PL relation (expected 1.5% effect on H0)
 - IRSB method gives individual distances to pulsating stars also in LMC & SMC (GAIA can NOT help)
 - Completed LMC in 2011, ongoing LP at ESO for SMC
 - Application for new LP at ESO "LACES", PI: Romaniello



Ole Streicher 3D Spectroscopy





• MUSE: VLT Integral Field Spectrograph with 24 IFUs

500- [OI]

- Sky subtraction: important step in data reduction
- Determine flux of sky lines and continuum
- Apply Line Spread Function (LSF) to lines
- LSF determined for 24 x 48
 - = 1152 minislits ("slices")









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Lyon

DbView

Target

Processo

QA/QC

Groningen DB

Toulouse

Zürich

Typical configuration

ataserver: ~10 TB

)PU: 32-48 Cores

256 GB Mem

- Compute, store, retrieve, MUSE data for the consortium
- AstroWISE as base
- Data reduction done automatically when needed

Debian

- Debian Astronomy Working Group
- Packaging astronomical software for Debian
- Common packages (astropy, ds9), but also specific (ESO pipelines)
- Also for Ubuntu, Mint, ...
- Volunteers needed :-)





Leibniz-Institut für Astrophysik Potsdam

> Carsten Denker Optical Solar Physics Physics of the Sun Cosmic Magnetic Fields

Here Comes the Sun ...

The Beatles – Abbey Road (1969)



Postdoc @ Big Bear Solar Observatory – California Institute of Technology



Physics (PhD) and Social Sciences (Diploma) @ Göttingen



Assistant Professor @ Center for Solar-Terrestrial Research – New Jersey Institute of Technology





Spokesperson Leibniz Graduate School

Head Optical Solar Physics Group @ AIP Adjunct Professor @ University of Potsdam

GREGOR Solar Telescope GREGOR Fabry-Perot Interferometer

