Aspekt 2019 – Annual Conference of the VdS section spectroscopy 3 – 5 May 2019

All times including discussion

Friday evening

Meeting of the early birds at the Hotel Ammerhauser in Anthering.

Saturday

Welcome		
09:00 – 09:15	**Opening** Herbert Pühringer	
9:15 – 9:30	**Section issues I** All	We discuss topics that will become important for the section in the near future and that will have to be decided at the meeting. They can be discussed informally between the participants during the meeting and should be decided on Sunday.

Session 1 – Observations		
9:30 – 10:15	**A study of circumstellar material in beta Persei** Bernd Bitnar Christian Brock Ulrich Waldschläger Uwe Zurmühl	To investigate the circumstellar material in the beta Persei binary system with mass transfer H alpha spectra were collected over a 5 year period by several observers. We compared the observed spectra with a model of the H alpha line and extracted difference spectra, in which the photospheric absorption of the stars was eliminated. These difference spectra were evaluated to create a geometrical model of the circumstellar material in the binary system.
10:15 – 11:00	**Coffee Break**	
11:00 – 11:45	**Simultaneous photometry and spectroscopy of the exceptional asteroid 3200 Phaethon with a Shelyak Alpy spectrograph attached to a C9.25 telescope.** Huib Henrichs	In December 2017 the potentially hazardous asteroid Phaethon passed the Earth at only 27 times the distance to the Moon. Its maximum brightness was around magnitude 11. From my remotely controllable home rooftop observatory in the middle of Amsterdam, equipped with a Shelyak Alpy spectrograph attached to a C9.25 telescope, I was able to take a spectrum. I removed the solar contribution in order to obtain the reflection spectrum, which allowed the unambiguous classification of the asteroid as C-complex type B. The spectrum and classification were in good agreement with earlier results obtained with the 4.2 m William Herschel Telescope on La Palma in 2007. I had mounted a photometric V filter in the light path of the guiding module, such that the guider exposures could be calibrated to obtain V magnitudes. A few series of exposures spread over several days showed the rapid motion of the asteroid. The magnitudes were in good agreement with measurements reported by others. In this report I describe the particular properties of this remarkable asteroid, the instrumentation, the acquisition, and the spectroscopic and photometric analysis. In particular I recommend in cases of variable objects to place a photometric filter in front of the guider camera of the spectrograph: this allows practically simultaneous photometric and spectroscopic measurements without having to change instruments. This work shows that even with small equipment such results are within reach.

11:45 – 12:30	**Very bright stars with the BRITE nano satellites** Tony Moffat	With various recent discoveries or revelations (e.g. gamma-ray bursts, gravitational radiation, the first stars must have been very massive, etc.), the most massive stars–i.e. those that start their lives with masses in excess of about 20 Mo and therefore blow very strong winds and explode catastrophically at the end of their lives–have enjoyed a great deal of enhanced notoriety. I will illustrate this circumstance by zeroing in on some big results obtained by the small telescopes of the BRITE-Constellation nanosat space mission, including the famous eta Carinae – once the visually 2nd brightest star in the sky for a decade in the 1840s. Many of these have also benefitted from direct input by amateur astronomers.
12:30 – 14:00	**Lunch Break**	
Session 2 – Instrumentation and Data Analysis		
14.00 - 14:30	**Echelle measuring station "E1" for spectral resolutions up to R=30.000** Ulrich Waldschläger	The talk introduces an Echelle system that the author built between 2016 and 2018 and which has an adjustable resolving power between 12 000 and 30000. In addition to the concept development and the problems with the technical implementation, various optimization steps and the current performance of the spectrograph on the basis of calibration spectra and selected objects are presented. Within the scope of the self-construction project, a calibration and flat light source as well as a thermal chamber for stabilization of the spectrograph were developed. These components will also be presented in the presentation. The spectrograph and the calibration light source will be demonstrated on site.
14:30 – 15:15	**The fairy tale: VEGA observatory and the construction of a spectrograph** Robert Kallinger Matteo Kucher Nikolaus Webersberger Jésus Rodrigúes	The fairy tale for realization of the VEGA observatory and a realization of a spectroscope for the new telescopes. The positive effect for more interest in spectroscopy at the VEGA observatory and the cooperation with ESO, especially the use of the Echelle spectrograph FLECHAS and new projects.

	Carlos Guirao Gerardo Ávila Paolo Sereni Herbert Pühringer	
15:15 – 16:00	**Coffee Break**	
16:00 – 16:30	**Project Yellow Hypergiants** Christoph Quandt	One year monitoring of rho Cas - what has happened? We present the data of our standard monitoring from over one year of observation. In addition, special solutions for the measurement of stellar winds and other linear intrinsic velocity fields are presented.
16:30 – 18:30	**Round Table – Techniques of Data Analysis** Bernd Bitnar, Huib Henrichs, Tony Moffat, Christoph Quandt Chair: Thomas Eversberg	After the data reduction comes the analysis. We introduce different techniques and highlight their applicability in amateur spectroscopy. These include grayscale plots, line moments or the separation of spectroscopic binary stars. We conduct the conversation ad hoc and in dialogue with the audience.

Sonntag

Session 3 – Observation Techniques		
9:00 – 9:20	**Flat-Fields - What are they for?** Thomas Eversberg	For sufficient data reduction, various calibration and correction images are taken. This includes biases, darks and flats. The latter in particular are the subject of repeated discussions. How are the data processed? What exactly are they used for and how can they best be recorded? The lecture will illuminate the basics and give a hint for the production of good flats.
9:20 – 9:45	**An introduction to radio astronomy with a focus on spectroscopy**	Objects outside of our solar system can only be observed by their radiation. Up to now only three of such messengers are known: cosmic rays, gravitational waves and

	Gerrit Grutzek	electromagnetic waves. The latter one is known since the beginning of mankind. But observations outside the visible regime are relatively young. The observation of radio waves from outside of our solar system began in 1932.Today the radio astronomy is an important observational part of astrophysics. Similar to optical observations spectroscopy is a part of radio astronomy. But the fundamental ideas to generate a spectrum differ. Instead of counting photons (as it is done with CCDs) in spectroscopic radio astronomy the received electromagnetic waves are analyzed. Therefore the receiving and processing have different challenges in the radio regime than the optical. In this talk an introduction into radio astronomy is given with a focus on spectroscopy.
9:45 – 10:15	**Coffee Break**	
10:15 – 11:00	**Fourier analysis in physics, astrophysics and spectroscopy** Sebastian Heß	Whether in acoustics, optics or atomic physics, nature loves frequency analysis. Not only the multitude of applications is remarkable, but also the fact that non-periodic signals and apparently complex patterns, such as those produced by multiple stars, are represented by the skilful combination of periodic oscillations. Some misunderstandings have to be avoided.
11:00 – 11:30	**Polarization effects in spectroscopy** Jan Sundermann	Sun observation on a Merz refractor (built 1920) using a solar prism. The polarized partial beam of the Brewster angle is used for visual observation. The processing of this signal in the spectroscope is bound to the orientation to the polarization plane.
11:30 – 12:30	**Section issues II** All	We discuss topics that will become important for the section in the near future and that will have to be decided at the meeting. They can be discussed informally between the participants during the meeting and should be decided on Sunday.
12:30 – 12:45	**Closing remarks & invitation to ASpekt 2020 in Lübeck** Herbert Pühringer &Christoph Quandt	
12:45	**End of conference & Lunch**	

Poster

Variable Stars on the Asymptotic Giant Branch (AGB) Uwe Zurmühl	Near the end of stellar evolution, low to medium mass stars undergo massive changes in the star's atmosphere while climbing up the AGB. This is reflected in characteristic spectral features. For pulsating variables of Mira type often phase-dependent emission lines show up in addition. This poster presents low- to mid-resolution sample spectra, produced with slitless grism setups.