



DAWN News July and August 2019

Dear DAWN family,

Welcome again to DAWN News! Due to the summer holiday, this newsletter contains events and information regarding the months of July and August 2019.

In this issue of DAWN News you can find the following content:

- DAWN summit, Trip to Hven
- Status of ALMA proposals
- Initiate Wednesday-walks
- Results from the Newsletter Survey
- ESA workshop for JWST proposal preparation
- UNCA Physics Department DAWN-IRES Blog Post
- Peter Laursen quoted in a Danish magazine
- DHL Relay Race 2019
- Employee News
 - Cecilie Sand Nørholm Master's Thesis Defense
 - Christina Konstantopoulou's Master's Thesis Defense
 - Kate got a new job!
 - Upcoming birthdays
 - New hires & Departures
- DAWN papers published in July-August 2019

Feedback and content suggestions for future newsletters are highly appreciated – just send an e-mail to: clara.artega@nbi.ku.dk .

Happy reading!

DAWN Summit

The DAWN Summit took place on July 08-12th. Meetings were held at DAWN and DTU, where different discussions took place, such as the current status of DAWN and combining projects.

On day 3 of the summit, we went on a trip to Hven, where we visited the Tycho Brahe museum and observatory. We also visited a whisky distillery. Here are some pictures of the trip!



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Back at Copenhagen we enjoyed a summer barbeque before the meetings took place and the Summit dinner on Thursday night.





Status of ALMA proposals

The submission deadline for ALMA proposals was on April 17th. At DAWN, we had several people submitting proposals, and we are excited to share that DAWN'ers had successful submissions!

The proposals from Kate Whitaker, Francesco Valentino and Isabella Cortzen have been accepted, congratulations!

Initiate Wednesday walks

The new semester comes with a new initiative! It is focused on improving our health. We could set up the "Wednesday walks", where we meet to take 20 minute walks in Fælledparken, enjoying the greenest spot in Copenhagen and some fresh air. Our foreign associates are very welcome to join anytime they are visiting DAWN!

Results from the Newsletter survey

A survey was made regarding DAWN's monthly Newsletter and here we share some of the results.

We asked which content the readers would like to find in the internal Newsletter, for which the answers were:

New papers submitted, important upcoming deadlines (funding, observatories)	<p>I read all of it - science highlights, personal updates etc.!</p> <p>A calendar with: oncoming holidays (I don't know all the Danish holidays), deadlines (for example to apply for telescope time), and any other important event. Science updates (for example the papers published this month co-authored by DAWN members, or other achievements). What about every month one of us pick up a figure that is particularly interesting to her/him (telescope image, computer simulation, or else)? And also more personal stuff (if someone wants to share)</p> <p>What is happening on an everyday basis at DAWN. Why are people away (conferences, meetings, vacation, etc.),</p>
Future and past happenings at DAWN	
Interesting science and perspectives on science	
What happened the past month, in terms of conferences, meetings, defense, birthdays, any events basically	
Listing of DAWN papers; Conferences attended; Big results from DAWN-related collaborations	
Recent DAWN achievements, Upcoming	

Regarding how often should the Newsletter be sent, the current monthly periodicity is the preferred option:

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Weekly	3
Bi-weekly	1
Monthly	5
Andet	0



We then asked if we should also make an external newsletter, in which case, what content should it include and who should we share it with.

Yes	0
No	2
Maybe	7
Andet	0



New papers and news on people.
Nobody reads external newsletters unless the content directly affects the reader. Who's that interesting in the end?
High profile prospects and curated content just for them
Probably just science if its external
extended to NBI? But I fear it seems we "brag".

People who would subscribe to it, so people who would be interested in following what is going on at DAWN. As for the content, whatever is worth sharing with people who aren't working at DAWN.
We should include int'l associates in our INTERNAL newsletter (maybe?!). Is a newsletter what we want to send externally, or would it be better in other formats? Video clips on the website? More lengthy news articles?
General public (FB; Twitter; ...). Recent DAWN achievements could be shared, but perhaps not on a regular basis, since if there are none, it's not interesting to read for others

New suggestions and comments are always welcome! Just refer to clara.arteaga@nbi.ku.dk.

ESA workshop

Our application to host an ESA workshop for JWST proposal preparation early next year has been approved!

More information on this will follow.



UNCA Physics Department DAWN-IRES Blog Post

UNC Asheville Physics major Darren Stroupe has participated this summer in the DAWN-IRES (International Research Experience for Students) Scholar Program. He has conducted research here at DAWN, focused on classifying the quality of redshift fits using low-resolution grism spectra and machine learning classification models, mentored by Dr. Gabe Brammer. Darren has written a blog post about his experience at DAWN. [Here is a link](#) to his blog post.

Peter Laursen quoted in a Danish magazine

Peter Laursen has been quoted in the Danish magazine "Ude og Hjemme". You can read the article (translated) below.

It has been confirmed: there are more stars than grains of sand

The old saying that there are more stars than grains of sand on Earth is most likely true. Astrophysicist Peter Laursen from the University of Oslo confirms that.

According to Peter Laursen's calculations, it is estimated that there are 10 times as many stars in the visible Universe than there are grains of sand on all of the beaches on Earth. More specifically, there are approximately one thousand billion billion grains of sand on Earth, which equals to 1000000000000000000000 (10 followed by 21 zeros).

However, the number of stars is even more astronomical and amounts to approximately the number 10 followed by between 22 and 23 0's.

"It is difficult to be precise, but it is not wrong to say that there are 100 times as many stars in the observable Universe, than there are grains of sand on all the beaches on Earth" says the astrophysicist.

DHL Relay Race 2019

On August 30th there will be two teams from DAWN participating in the DHL Relay Race 2019, one running and the other walking. The Race will take place in Fælledparken, with access to the tents starting at 4.30 pm. We look forward to seeing how the DAWN teams do!

Employee News: Cecilie Sand Nørholm Master's Thesis Defense

On Monday, September 2nd at 11:00 am, Cecilie will have her Master's thesis defense at the Lecture Room (#4.4.12, fourth floor) in Vibenshuset (Lyngbyvej 2 / DK-2100 København Ø).

Read more about Cecilie's thesis below.

The Effect of Protoclusters on the Properties of Lyman-Alpha Emitters



Abstract: The environment surrounding galaxies is a well-known driver of their evolution. This is particularly true for galaxies residing in overdense regions of the local Universe, i.e., clusters and groups. However, when and how the environmental effects began playing a role for galaxy evolution is still debated.

In this thesis, we use narrow-band imaging data from the FORS2 instrument at the UT1 Very Large Telescope to identify and study the properties of 40 Lyman- α emitting galaxies residing in two protoclusters at redshifts $z=2.095$ and $z=2.19$. We find that within these two protoclusters, the projected number count of Lyman- α emitting galaxies is lower than expectations from the general field of galaxies. Moreover, we find the star formation rates of the Lyman- α emitters to be below the expected values for field galaxies of same stellar mass. These results indicate that star-forming protocluster galaxies are undergoing early quenching, meaning that they are indeed affected by the surrounding medium, in a similar way to what is observed in local clusters, already 10 Gyr ago.

Furthermore, we investigate the presence of reservoirs of Lyman- α emitting gas in the intracluster medium of the two protoclusters. Though we do not find evidence of extended Lyman- α emission in the central cores of the protoclusters, we discover and spectroscopically confirm a Lyman- α blob, located between a rare pair of AGN in the outer region of the $z=2.19$ protocluster, suggesting a possible connection with the formation of this structure.

Employee News: Christina Konstantopoulou Master's Thesis Defense

On Tuesday, September 17th, from 10:00 to 12:00 am, Christina will also have her Master's thesis defense at the Lecture Room (#4.4.12, fourth floor) in Vibenshuset.

Read more about Christina's thesis below.

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Astrometric selection and spectroscopy of candidate red quasars



Abstract: Quasi-stellar radio sources (Quasars), the most luminous subgroup of Active Galactic Nuclei (AGN), are powered by the gravitational potential of accreting supermassive black holes in the center of massive galaxies. Due to their great cosmological importance, many selection methods have been explored, and a number of surveys have been built to detect and classify these objects. Quasars appear to be reddened, by clouds of dust in the line of sight between them and the observer or by dust in their host galaxies. This sub-population has been missed by multiple quasar surveys, since their selection processes are significantly affected by a number of biases.

In this thesis, we explore the possibility of combining the unprecedented accuracy of GAIA's astrometry with photometric criteria, to select red quasars. The aim is to characterise the efficiency of this selection method that does not suffer from most of the biases of other selection techniques.

For this purpose, a sample of 12 candidate red quasars have been selected for observation at the Nordic Optical Telescope (NOT) using these combination criteria. After spectroscopic analysis, 11 are confirmed as new red quasars that have been missed by other surveys, and one contaminating star. By visualizing our sample in colour space, we highlight the region of our sample and as a result the region that needs to be explored for successfully detecting red quasars. Although, our sample is small, it is adequate to demonstrate the success of this method to select red quasars, while achieving low contamination by stars. It is thus important to further explore this selection technique, in order to create large and well understood quasar samples.

Employee News: Kate got a new job!

Our fellow DAWN Associate Kate Whitaker will be joining the University of Massachusetts Astronomy faculty this fall, after having been working as an Associate Professor at the University of Connecticut. Her new contact information is kwhitaker@astro.umass.edu.

Employee News: Birthdays

In the month of August, there have been two birthdays: Vasily Kokorev [REDACTED] and Johan Peter Uldall Fynbo [REDACTED] - happy, happy birthday!



Employee News: New Hire

At the beginning of September, we will welcome our new intern Bidisha Sen!

Bidisha is from MIT, where she just completed her Bachelor of Science in Physics and Economics this past school year, and she will be applying to graduate school in Astrophysics and Astronomy this quarter.

In Bidisha's words: "I will be here for a year through MIT's international internship program, MISTI, to do astrophysics research, in part to experience how research is conducted at other universities in the world, as well as to explore different areas of astrophysics before going to graduate school, and to experience a different country and culture from my own. As of now, I don't have a concrete project or a final supervisor yet, since we haven't found the best fit project for me yet, but I am very excited to be here and learn from everyone!".

Please help give a warm welcome to Bidisha!

Employee News: Nanna is leaving

Our dear secretary Nanna Langer Jensen is sadly leaving us! August 28th is her last day at DAWN. Nanna has been with us since April 2019.

In Nanna's words: "Thank you all for being so welcoming! Even though I have only been here briefly, it has been a pleasure getting to know every one of you - I wish you all the very best!"

Nanna, you will be greatly missed!

The search for a new secretary is undergoing.



DAWN papers published on July-August 2019

The Newsletter Survey showed that some of you wanted the DAWN publications of the month to be included in the Newsletter, so here are the papers with DAWN contributions from July and August 2019.

Publication Date: July 2019

Title	DAWN author/s	DOI	arXiv
Revealing the Stellar Mass and Dust Distributions of Submillimeter Galaxies at Redshift 2	Pascal Oesch, Sune Toft	10.3847/1538-4357/ab1f77	arXiv:1905.06960
The effect of dust bias on the census of neutral gas and metals in the high-redshift Universe due to SDSS-II quasar colour selection	Johan Peter Uldall Fynbo	10.1093/mnras/stz1120	arXiv:1904.06966
Nature of the unusual transient AT 2018cow from HI observations of its host galaxy	Johan Peter Uldall Fynbo, Darach Jafar Watson	10.1051/0004-6361/201935372	arXiv:1902.10144
Lyman α -emitting galaxies in the epoch of reionization	Peter Laursen, Bo Milvang-Jensen, Johan Peter Uldall Fynbo	10.1051/0004-6361/201833645	arXiv:1806.07392
The energetics of starburst-driven outflows at $z \sim 1$ from KMOS	Georgios Magdis	10.1093/mnras/stz1275	-
Optical integral field spectroscopy of intermediate redshift infrared bright galaxies	Georgios Magdis	10.1093/mnras/stz1218	arXiv:1904.13267

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Sub-kiloparsec Imaging of Lyman-alpha Emission in a Low Mass, Highly Ionized, Gravitationally Lensed Galaxy at $z = 1.84$	Gabriel Brammer	-	arXiv:1907.11733
Stellar and Dust Properties of a Complete Sample of Massive Dusty Galaxies at $1 \leq z \leq 4$ from MAGPHYS Modeling of UltraVISTA DR3 and Herschel Photometry	Gabriel Brammer	-	arXiv:1907.08152
COSMOS-DASH: The Evolution of the Galaxy Size–Mass Relation since $z \sim 3$ from New Wide-field WFC3 Imaging Combined with CANDELS/3D-HST	Gabriel Brammer, Katherine Whitaker	10.3847/1538-4357/ab290a	arXiv:1808.04379
The Evolution and Origin of Ionized Gas Velocity Dispersion from $z \sim 2.6$ to $z \sim 0.6$ with KMOS ^{3D}	Gabriel Brammer	10.3847/1538-4357/ab27cc	arXiv:1906.02737
Multi-filament gas inflows fuelling young star-forming galaxies	Daniel Ceverino	10.1038/s41550-019-0791-2	-
Investigating the physical properties of galaxies in the Epoch of Reionization with MIRI/JWST spectroscopy	Daniel Ceverino	-	arXiv:1907.06962
Sunyaev-Zel'dovich detection of the galaxy cluster Cl J1449+0856 at $z = 1.99$: the pressure profile in uv space	Francesco Valentino	-	arXiv:1907.10985

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The COSMOS-UltraVISTA stellar-to-halo mass relationship: new insights on galaxy formation efficiency out to $z \sim 5$	Peter Capak, Bo Milvang-Jensen	10.1093/mnras/stz1198	arXiv:1810.10557
An Evolving and Mass-dependent $\sigma_{\text{SFR}}-M_*$ Relation for Galaxies	Claudia Lagos	10.3847/1538-4357/ab1f8d	arXiv:1905.02023
The evolution of SMBH spin and AGN luminosities for $z < 6$ within a semi-analytic model of galaxy formation	Claudia Lagos	10.1093/mnras/stz1216	arXiv:1806.08370
Assembly bias evidence in close galaxy pairs	Claudia Lagos	10.1093/mnras/stz1286	arXiv:1905.03266
An accurate low-redshift measurement of the cosmic neutral hydrogen density	Claudia Lagos	10.1093/mnras/stz2038	arXiv:1907.10375
Investigating the physical properties of galaxies in the Epoch of Reionization with MIRI/JWST spectroscopy	Luis Colina, Daniel Ceverino, Karina Caputi, Hans Ulrik Nørregaard-Nielsen	-	arXiv:1907.06962
Conditions for Reionizing the Universe with a Low Galaxy Ionizing Photon Escape Fraction	Kristian Finlator	10.3847/1538-4357/ab1ea8	arXiv:1902.02792
Horizon-AGN virtual observatory - 1. SED-fitting performance and forecasts for future imaging surveys	Peter Capak	10.1093/mnras/stz1054	arXiv:1903.10934



Mergers, Starbursts, and Quenching in the Simba Simulation	Desika Narayanan	-	arXiv:1907.12680
Discovery of a giant and luminous Ly α +CIV+HeII nebula at z=3.326 with extreme emission line ratios	Luis Colina	-	arXiv:1907.08486
Rapid Reionization by the Oligarchs: The Case for Massive, UV-Bright, Star-Forming Galaxies with High Escape Fractions	Pascal Oesch	-	arXiv:1907.13130
The Super Eight Galaxies: Properties of a Sample of Very Bright Galaxies at 7<z<8	Pascal Oesch	-	arXiv:1907.05512
Newly Discovered Bright z ~ 9–10 Galaxies and Improved Constraints on Their Prevalence Using the Full CANDELS Area	Pascal Oesch	10.3847/1538-4357/ab24c5	arXiv:1905.05202

Publication Date: August 2019

Title	DAWN author	DOI	arXiv
The Gemini/HST Galaxy Cluster Project: Environment Effects on the Stellar Populations in the Lynx Clusters at z = 1.27	Sune Toft	10.3847/1538-4357/ab2d9d	arXiv:1907.00121

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Spatially Resolved Water Emission from Gravitationally Lensed Dusty Star-forming Galaxies at $z \sim 3$	Thomas Greve, Desika Narayanan	10.3847/1538-4357/ab290d	arXiv:1906.05469
The VANDELS survey: the stellar metallicities of star-forming galaxies at $2.5 < z < 5.0$	Johan Peter Uldall Fynbo	10.1093/mnras/stz1402	arXiv:1903.11081
Exploring galaxy dark matter halos across redshifts with strong quasar absorbers	Johan Peter Uldall Fynbo	-	arXiv:1908.05363
New constraints on the physical conditions in H ₂ -bearing GRB-host damped Lyman- α absorbers	Johan Peter Uldall Fynbo, Darach Jafar Watson	-	arXiv:1908.02309
Big Three Dragons: A $z = 7.15$ Lyman-break galaxy detected in [O III] 88 μm , [C II] 158 μm , and dust continuum with ALMA	Pascal Oesch, Darach Jafar Watson	10.1093/pasj/psz049	arXiv:1806.00486
Double dark matter vision: twice the number of compact-source lenses with narrow-line lensing and the WFC3 Grism	Gabriel Brammer	-	arXiv:1908.06344
The CANDELS/SHARDS Multiwavelength Catalog in GOODS-N: Photometry, Photometric Redshifts, Stellar Masses, Emission-line Fluxes, and Star Formation Rates	Gabriel Brammer	10.3847/1538-4365/ab23f2	arXiv:1908.00569

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A contribution of star-forming clumps and accreting satellites to the mass assembly of $z \sim 2$ galaxies	Francesco Valentino	10.1093/mnras/stz2099	arXiv:1907.12136
The Hi Velocity Function: a test of cosmology or baryon physics?	Claudia Lagos	10.1093/mnras/stz2069	arXiv:1906.06130
The mass-size plane of EAGLE galaxies	Claudia Lagos	-	arXiv:1908.00416
AGNs at the cosmic dawn: predictions for future surveys from a Λ CDM cosmological model	Claudia Lagos	-	arXiv:1908.02841
From Stellar Halos to Intracluster Light: the physics of the Intra-Halo Stellar Component in cosmological hydrodynamical simulations	Claudia Lagos	-	arXiv:1908.02945
From the far-ultraviolet to the far-infrared -- galaxy emission at $0 \leq z \leq 10$ in the Shark semi-analytic model	Claudia Lagos	-	arXiv:1908.03423
Atomic and molecular gas in IllustrisTNG galaxies at low redshift	Claudia Lagos	10.1093/mnras/stz1323	arXiv:1902.10714
WALLABY early science - III. An H I study of the spiral galaxy NGC 1566	Claudia Lagos	10.1093/mnras/stz1448	arXiv:1905.09491

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The evolution of the UV-to-mm extragalactic background light: evidence for a top-heavy initial mass function?	Claudia Lagos	10.1093/mnras/stz1398	arXiv:1808.05208
Quenching time-scales of galaxies in the EAGLE simulations	Claudia Lagos	10.1093/mnras/stz1410	arXiv:1810.07335
Evidence for Inside-Out Galaxy Growth and Quenching of a z~2 Compact Galaxy from High-Resolution Molecular Gas Imaging	Katherine Whitaker	-	arXiv:1908.02294
The Hubble Legacy Field GOODS-S Photometric Catalog	Katherine Whitaker, Pascal Oesch	-	arXiv:1908.05682
Statistical Stellar Mass Corrections for High-z Galaxies Observed with JWST Broadband Filters Due to Template Degeneracies	Karina Caputi, Luis Colina, Hans Ulrik Nørregaard-Nielsen	10.3847/1538-4365/ab2911	arXiv:1906.05320
ARTIST: Fast radiative transfer for large-scale simulations of the epoch of reionisation	Kristian Finlator	10.1093/mnras/stz2171	arXiv:1901.03340
How to Find Variable Active Galactic Nuclei with Machine Learning	Peter Capak	10.3847/2041-8213/ab3581	arXiv:1908.07542
Bringing Manifold Learning and Dimensionality Reduction to SED Fitters	Peter Capak	10.3847/2041-8213/ab3418	arXiv:1905.10379

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The ALPINE-ALMA [CII] Survey: A Triple Merger at $z \sim 4.56$	Peter Capak, Pascal Oesch	-	arXiv:1908.07777
Imaging the molecular interstellar medium in a gravitationally lensed star-forming galaxy at $z = 5.7$	Desika Narayanan	10.1051/0004-6361/201935308	arXiv:1905.12738

Thank you for taking the time to read the newsletter!