

# M.Sc. Ümit Kavak | CV

University of Groningen – Kapteyn Astronomical Institute

Landleven 12, 9747 AD Groningen, The Netherlands

☎ +31 (6) 118 02560 • ☎ +31 (50) 363 4034

✉ U.kavak@astro.rug.nl • 🌐 www.umitkavak.com

## Research Interests

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astrochemistry, photo-dissociation regions, massive star formation, molecular clouds, HII regions, star formation, ISM, radio jets in massive star forming regions, interferometric observation, radio, millimeter, and sub-millimeter telescopes, and data analysis

## Education

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### Kapteyn Astronomical Institute/SRON

*Ph.D. student in group of Prof. Dr. Floris F.S. van der Tak*

*Co-Supervisor: Prof. Dr. A.G.G.M. (Xander) Tielens*

### Rijksuniversiteit Groningen

*Dec 2016–current*

### Leiden Observatory

*Leiden/ESA Astrophysics Program for Summer Students (LEAPS) 2016*

*Supervisors: Dr. Vianney Taquet, Dr. Catherine Walsh*

### Universiteit Leiden

*June–August, 2016*

### I. Physikalisches Institut, Math.-Naturwiss. Fakultät

*MSc (ERASMUS+ Student Exchange Program)*

*Master's thesis supervised by Prof. Dr. Peter Schilke*

### Universität zu Köln

*Oct 2014–Aug 2015*

### Graduate School of Science and Engineering

*MSc, Coursework completed*

### Istanbul University

*Sep 2012–May 2016*

### Department of Astronomy and Space Sciences, Faculty of Science

*BSc*

### Istanbul University

*Sep 2008–Jun 2012*

## PhD thesis

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**Title:** *The Interaction of Stars with Gas Clouds in the Milky Way*

**Supervisors:** Prof. Dr. Floris van der Tak, Prof. Dr. A.G.G.M. (Xander) Tielens

**Description:** Long-wavelength (far-infrared and radio) observations are ideally suited to study the formation of massive stars and their interaction with the ambient material, as they probe low temperatures and do not suffer from dust extinction. The ground-based (ALMA), stratospheric (STO-2, SOFIA) and space-based (*Herschel*) telescopes are being used to study the heating and ionisation of gas clouds by nearby stars, which limits the capability of galaxies for future star formation.

## Master's thesis

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**Title:** *A quest for radio jets in high-mass young stellar objects*

**Supervisors:** Prof. Dr. Peter Schilke, Prof. Dr. Tansel Ak

**Thesis No in the CoHE Thesis Center:** 427905

**DOI:** 10.5281/zenodo.53119

**Description:** Worked on the analysis of a sample of high-mass star-forming regions, searching for radio jets by using continuum observations obtained via the Very Large Array (VLA). CASA (Common Astronomy Software Applications) is used to reduce and analyse the VLA continuum data.

## Projects

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### IU-BAP Project

Istanbul University

"A quest for radio jets in high-mass young stellar objects"

2014–2015

(Scientific Research Projects Coordination Unit of Istanbul University (IU-BAP), Master's Thesis Project, Project ID: 44659)

Main focus of this project:

- Studying radio jets from high mass young stellar objects
- Searching for radio jets in high-mass protostars, estimation of their properties and comparison with molecular outflows and radiojets from low-mass protostars
- Analysis of continuum VLA data

## Awards and Scholarships

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- **LKBF Grant** *Leids Kerkhoven-Bosscha Fonds (LKBF) Grant for USA trip for 2 weeks* **July 2018**
- **Certificate** *Social Responsibility Project of the Istanbul University: "Children's University 2016", Istanbul, Turkey* **Feb 2016**
- **Grant** *The Sci. and Tech. Research Council of Turkey (TUBITAK), National Grants of TUBITAK Intended for Priority Fields, 2210-C (6200 €)* **Oct 2014–2015**
- **ERASMUS+ Grant** *The European Union - European Commission Lifelong Learning Programme (LLP) (2000 €)* **Oct 2014–Mar 2015**
- **Grant** *The Sci. and Tech. Research Council of Turkey (TUBITAK), Participate Grants For Scientific Events Abroad BIDEB, 2224-A (700 €)* **Feb 10–14, 2014**
- **Student Award** *Istanbul University, Science Faculty, The degree of graduation Department of Astronomy and Space Sciences* **July 2012**

## Observing Experience

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- **IRAM30m Telescope; EMIR Instrument** (Sierra Nevada, Spain) "Chemical evolution of the circumstellar envelopes around evolved stars: IRC+10216 and NGC 7027" **Sep 12–15, 2015**

## Academic Activities

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### Teaching Duties.....

- **Interstellar Medium (ISM)**, Teaching Assistance of Inga Kamp, Rijksuniversiteit Groningen, Groningen, The Netherlands **Feb - April, 2018**
- **Prognum 2017** 'Python and Linux Course', Teaching Assistance of Marteen G. R. Vogelaar, University of Groningen, Groningen, The Netherlands **Feb - April, 2017**

### Talks.....

- **Origin of the Hydrogen Fluoride Emission in the Orion Bar** at the Olympian Symposium 2018, Paralia Katerini, Mount Olympus, Greece **May 29th, 2018**

- **Origin of the Hydrogen Fluoride Emission in the Orion Bar** at the 73rd Netherlands Astronomers Conference (NAC2018) **May 15th, 2018**
- **The Interaction of Stars with Gas Clouds: HF in the Orion Bar**, Wednesday Launch Talk (WLT) of Interstellar Medium, A.G.M.M. (Xander) Tielens, Leiden Observatory, Leiden, the Netherlands **Oct 18th, 2017**
- **Understanding the Chemical Complexity in Protostellar Outflows: L1157-B1**, Wednesday Launch Talk (WLT) of Kapteyn Institute, Groningen, the Netherlands **Oct 4th, 2017**
- **Massive Star Formation at Radio Wavelengths**, VIII. URSI-Turkey National Scientific Congress, Ankara, Turkey **Sep 1-3, 2016**

### Meetings & Workshops.....

#### Work Visit.....

- **NASA/JPL-Caltech**, Invited by Paul Goldsmith to JPL-Caltech within the STO-2 Project, Pasadena, California **2-6 July, 2018**

### Conferences & Proceedings.....

- **Kavak, U.**, Sanchez-Monge, A., Schilke, P., Yildiz, U., Ak, T. 2016, *Radyo Dalgaboylarında Büyük Kütleli Yıldız Oluşumu - Massive Star Formation at Radio Wavelengths*, URSI-Turkey 2016 VIII. Scientific Congress, Ankara, Turkey **[Link]** **Sep 1-3, 2016**

### Posters.....

- **Understanding of Chemical Complexity in Protostellar Outflows: L1157-B1 Star Forming Region**, Fundamentals of the Life In Universe, Rijksuniversiteit Groningen, Groningen, The Netherlands **[Link]** **31 Aug-1 Sep 2017**

## Computer Skills

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**Astronomy Packages:** CASA, GILDAS/CLASS

**Softwares:**  $\LaTeX$ , HTML5, Adobe Photoshop (Intermediate), GIMP

**Operation Systems:** MacOS, Ubuntu/Linux, Windows

**Languages:** Python

## Work Experiences

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- **IU Solar Observatory** *Istanbul University, Solar Observatory, Assistance Student* **2012-2013**
- **Moon Planetarium** *Planetarium Guide, Istanbul, Turkey* **2011-2012**
- **IU Solar Observatory** *Istanbul University, Solar Observatory, Assistance Student* **2010-2011**

### Popular Articles.....

- **Balloon Telescope at Edge of Space: STO-2** *Bilim ve Teknik Dergisi (in English: Science and Technique Journal) - TUBITAK, Turkey (Turkish)* **Mar 2017**
- **Where does come Oxygen?** *Sky - Turkish Astronomical Society (TAD) (It is written only in Turkish)* **Sep 2014**
- **Look to the past with ALMA** *Sky - Turkish Astronomical Society (TAD) (It is written only in Turkish)* **Aug 2013**

## Club Activities

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- **GUTSA**, Groningen University Turkish Student Association, Board Member **2017-18**
- **May Astronomy Festival of AAK** Istanbul University 'Amateur Astronomers Club (AAK)'  
Amateur Telescope Making Workshop **May 2010**
- **Astronomy Days of IKU** Istanbul Kültür University (IKU) 'Responsible of Amateur Telescope Making (ATM) Workshop' **2009**
- **Istanbul Yuri's Night 2009** Istanbul Kültür University (IKU) 'Attendant of AAK' **April 2009**

*I also participated in many meetings and public events, especially for primary and high schools, of Amateur Astronomers Club (AAK) of the Istanbul University (Turkey) throughout my bachelor period.*

## Languages

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Turkish	<i>Mother-tongue</i>
English	<i>Advanced</i>

## Outreach Activities

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History, calligraphy, amateur telescope making, world travel (visited 8 countries and 21 cities around the globe)

## References

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- **Prof. Dr. Floris van der Tak**  
SRON Netherlands Institute for Space Research  
Kapteyn Astronomical Institute, Landleven 12  
9747 AD Groningen, The Netherlands  
**Email:** vdtak@sron.nl  
**Tel:** +31 (50) 363 8753  
**Web:** <https://personal.sron.nl/~vdtak/>
- **Prof. Dr. A.G.G.M. (Xander) Tielens**  
Lorentz Center - Leiden Observatory  
P.O. Box 9513 NL-2300 RA  
Leiden, The Netherlands  
**Email:** tielens@strw.leidenuniv.nl  
**Tel:** +31 (0)71 527 8465  
**Web:** <https://home.strw.leidenuniv.nl/~tielens>
- **Dr. Umut Yildiz**  
NASA's Jet Propulsion Laboratory  
4800 Oak Grove Drive, M/S 169-506  
Pasadena, CA 91109, USA  
**Email:** Umut.Yildiz@jpl.nasa.gov  
**Tel:** +1 (828) 354-4909  
**Web:** <https://yildiz.space>
- **Dr. Álvaro Sánchez-Monge**  
I. Physikalisches Institut  
Universität zu Köln, Zùlpicherstr. 77  
50937 Köln, Germany  
**Email:** sanchez@ph1.uni-koeln.de  
**Tel:** +49 (0)2214703490  
**Web:** <https://hera.ph1.uni-koeln.de/~sanchez/>