

Proseminar: Astrophysik, Wintersemester 2021/22

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<http://hweb.hs.uni-hamburg.de/projects/star-formation>

- Termin: Blockveranstaltung am **13. und 14. Januar 2022**
- Online: <https://uni-hamburg.zoom.us/j/69281122154>
- Zoom-ID: 692 8112 2154
- Vortrag: 20+ Minuten, Vortragsfolien werden als Zusammenfassung/Ausarbeitung gewertet
- 10+ Minuten Diskussion und Nachbesprechung

Tagesablauf

	Topic	Name
	Donnerstag, 13. Januar 2022	
9:45	Einleitung	R. B.
10:00	Sternentstehung und Entwicklung von Proto-planetaren Scheiben	Jenna Fischer
10:30	Planetenentstehung	Sophia Lorenz
11:00	Suche nach extrasolaren Planeten, Methoden & Techniken	Jasmin Becks
11:30	Entstehung massereicher Sterne	Maida Pintul
12:00	Mittagspause	
13:00	Astroseismologie	Karim Anders
13:30	James Webb Space Telescope (JWST)	Lew Schöne
	Freitag, 14. Januar 2022	
10:00	Magnetfelder (1)	Laurenz Kriege
10:30	Magnetfelder (2)	Hanna Bürgel
11:00	Kosmische Hintergrundstrahlung (CMBR): Entstehung, Fluktuationen	Mohamed Fadhel Dahdouh
11:30	Pause	
12:30	Big-Bang Nukleosynthese (BBN)	Philipp Burgart
13:00	Entstehung der ersten Sterne	Flora Gundlach
13:30	Gravitationswellennachweis / Observatorien	Bjarne Wiedenmann

Die Themen sind nach **Absprache** frei wählbar. Themenvorschläge (bitte vergebene Themen beachten):

- **Instellare Medium (ISM): Zusammensetzung, Dynamik, Geschichtliches** (Weigert et al., 2009; Breitschwerdt, 1998)
- **Molekülwolken und Turbulenz** (Ballesteros-Paredes et al., 2007; Ballesteros-Paredes, 2004; Blitz et al., 2007)
- **Entstehung massereicher Sterne** (Zinnecker & Yorke, 2007; Beuther et al., 2007; McKee & Ostriker, 2007)
- **Suche nach extrasolaren Planeten, Methoden & Techniken** (Dvorak, 2007; Ollivier et al., 2009; Seager, 2011)
- **Entstehung von Planeten** (Armitage, 2010; Klahr & Brandner, 2011)
- **Moderne Teleskope und deren Ziele: z.B. ALMA, PLANCK, GAIA, SKA, E-ELT, JWST, TESS, PLATO**
- **TESS: Transiting Exoplanet Survey Satellite** (z.B., Ricker & TESS Science Team, 2017; Balonek et al., 2017; Barclay et al., 2018; Vanderspek, 2019)
- **Entstehung der ersten Sterne** (auch einzelne Aspekte, z.B. chemische und thermodynamische Entwicklung, SN-feedback) (Bromm et al., 2009; Abel et al., 2002; Glover, 2005; Greif, 2014)
- **Kosmische Hintergrundstrahlung (CMBR): Entstehung, Fluktuationen** (Weinberg, 2008; Kolb & Turner, 1994; Schneider, 2006; Durrer, 2008)
- **Entstehung der ersten Elemente: Big-Bang-Nukleosynthese** (Weinberg, 2008; Kolb & Turner, 1994)
- **Supernovae–Dunkle-Energie Projekte** (The Supernova Cosmology Project, High-Z SN search Team: Perlmutter, 2003; Perlmutter & Schmidt, 2003; Perlmutter, 2005; Riess, 2000)
- **Inter-/Extragalaktische Magnetfelder**(Neronov & Semikoz, 2009; Neronov & Vovk, 2010; Tavecchio et al., 2010; Taylor et al., 2011)
- **Ergebnisse der GAIA Mission** (z.B. Lindegren et al., 2016; Gaia Collaboration et al., 2016)
- **Direkter Nachweis von Gravitationswellen** (Abbott et al., 2016a,b; Sathyaprakash & Schutz, 2009)
- **Gravitationswellen Teleskope: LIGO, eLISA**
- **Gammblitze, *Gamma Ray Bursts*** (Janka, 2011; Janka et al., 2011)

- **Fast Radio Bursts** (z.B. Keane, 2018; Pen, 2018; Platts et al., 2018)
- **Astroseismologie** (Aerts et al., 2010; Di Mauro, 2017)

Lehrbücher

- Weigert, Wendker & Wisotzki, *Astronomie und Astrophysik*, 2009
- Unsöld & Baschek, *Der Neue Kosmos*, 2006
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- Bodenheimer, *Principles of Star Formation*, 2011
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- Bally & Reipurth, *The Birth of Stars and Planets*, 2006
- Larson, *The physics of star formation*, Report 2003
- Armitage, *Astrophysics of Planet Formation*, 2010
- Klahr & Brandner (Eds.), *Planet Formation*, 2011
- Binney & Tremaine, *Galactic Dynamics*, 2008
- Kolb & Turner, *The Early Universe*, 2005
- Liddle, *Einführung in die moderne Kosmologie*, 2009
- P. Schneider, *Extragalaktische Astronomie und Kosmologie*, 2007
- S. Weinberg, *Cosmology*, 2008

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