

# Proseminar Astrophysik, Wintersemester 2014/15

Prof. Robi Banerjee Hamburger Sternwarte, banerjee@hs.uni-hamburg.de,  
[www.hs.uni-hamburg.de/DE/Ins/Per/Banerjee](http://www.hs.uni-hamburg.de/DE/Ins/Per/Banerjee)

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- Termin: **Freitag, 9. Jan 2015**
- Hamburger Sternwarte, Bergedorf, *Sonnenbau*
- Vortrag: 20 Minuten, Vortragsfolien werden als Zusammenfassung/Ausarbeitung gewertet
- + 10 Minuten Diskussion und Nachbesprechung
- Themenauswahl: *first come, first serve* bis spätestens 19. Dezember 2014
- Vortrag kann auf Deutsch oder Englisch gehalten werden
- Vortragsbesprechung bis 7 Tage vor dem Termin möglich; Terminvereinbarung mindestens 7 Tage vorher
- Lehrbücher
  - Weigert, Wendker & Wisotzki, *Astronomie und Astrophysik*, 2009
  - Unsöld & Baschek, *Der Neue Kosmos*, 2006
  - Shu, *The Physics of Astrophysics, II*, 1992
  - Schulz, *The Formation and Early Evolution of Stars*, 2012
  - Bodenheimer, *Principles of Star Formation*, 2011
  - Ward-Thompson & Whitworth, *An Introduction to Star Formation*, 2011
  - Stahler & Palla, *The Formation of Stars*, 2004
  - 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
  - Woolfson, *On the Origin of Planets*, 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

## bisherige Themenverteilung

Zeit	Topic	Literatur (z.B.)	Name
	Das Interstellare Medium	Weigert et al. (2009) Breitschwerdt (1998)	Christopher Matthies
	Eigenschaften und Entwicklung von Sternhaufen	Weigert et al. (2009) Binney & Tremaine (2008) Portegies Zwart et al. (2010)	Morten Henken
	Entstehung massereicher Sterne	Zinnecker & Yorke (2007) Beuther et al. (2007) McKee & Ostriker (2007)	Steffen Albrecht
	Gammablitze	Janka (2011) Janka et al. (2011)	Torben Lange
	Suche nach Exoplaneten: Methoden und Techniken	z.B. Dvorak (2007) Ollivier et al. (2009) Seager (2011)	Felix Thiel
	Planetentstehung	Armitage (2010) Klahr & Brandner (2011) Woolfson (2011)	Mathis Fischer
	Kosmische Hintergrundstrahlung (CMBR): Entstehung, Fluktuationen	Weinberg (2008) Kolb & Turner (1994) Schneider (2006) Durrer (2008)	Felix Giese
	Ergebnisse der ESA PLANCK Mission	Overview: Planck Collaboration et al. (2014)	Lukas Heinze
	Entstehung der ersten Sterne	z.B. Bromm et al. (2009); Abel et al. (2002); Glover (2005); Greif (2014)	Karuna Kanes
	Moderne Teleskope und deren Ziele	z.B. ALMA, HERSCHEL, KEPLER, PLANCK, LOFAR, SKA, E-ELT	Katja Limberger
	Entstehung der ersten Elemente: Big-Bang-Nukleosynthese	Weinberg (2008) Kolb & Turner (1994) Pospelov & Pradler (2010) Iocco et al. (2009)	Pascal Stienemeier

## weitere Themenvorschläge

- **Molekülwolken und Turbulenz** (Ballesteros-Paredes et al., 2007; Ballesteros-Paredes, 2004; Blitz et al., 2007) (Dvorak, 2007; Ollivier et al., 2009; Seager, 2011)
- **Moderne Teleskope und deren Ziele:** z.B. ALMA, HERSCHEL, KEPLER, PLANCK, LOFAR, SKA, E-ELT
- **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)
- **Physik mit Gravitationswellen** (Sathyaprakash & Schutz, 2009)

## References

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- Ballesteros-Paredes, J., Turbulent Fragmentation and Star Formation. 2004, *Ap&SS*, 292, 193
- Ballesteros-Paredes, J., Klessen, R. S., Mac Low, M.-M., & Vazquez-Semadeni, E., Molecular Cloud Turbulence and Star Formation. 2007, in *Protostars and Planets V*, ed. B. Reipurth, D. Jewitt, & K. Keil, 63–80
- Beuther, H., Churchwell, E. B., McKee, C. F., & Tan, J. C., The Formation of Massive Stars. 2007, in *Protostars and Planets V*, ed. B. Reipurth, D. Jewitt, & K. Keil, 165–180
- Binney, J. & Tremaine, S. 2008, *Galactic Dynamics*: Second Edition (Princeton University Press)
- Blitz, L., Fukui, Y., Kawamura, A., Leroy, A., Mizuno, N., & Rosolowsky, E., Giant Molecular Clouds in Local Group Galaxies. 2007, *Protostars and Planets V*, 81
- Breitschwerdt, D., Introductory Lecture: The Local and General Interstellar Medium. 1998, in *Lecture Notes in Physics*, Berlin Springer Verlag, Vol. 506, IAU Colloq. 166: The Local Bubble and Beyond, ed. D. Breitschwerdt, M. J. Freyberg, & J. Truemper, 5–16
- Bromm, V., Yoshida, N., Hernquist, L., & McKee, C. F., The formation of the first stars and galaxies. 2009, *Nature*, 459, 49
- Durrer, R. 2008, *The Cosmic Microwave Background* (Cambridge Catalogue)
- Dvorak, R. 2007, *Extrasolar Planets. Formation, Detection and Dynamics* (Wiley-VCH, 2007)
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- Klahr, H. & Brandner, W. 2011, *Planet Formation* (Cambridge University Press, 2011)
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- Perlmutter, S., Supernovae, Dark Energy, and the Accelerating Universe. 2003, *Physics Today*, 56, 040000
- , Studying Dark Energy with Supernovae: Now, Soon, and the Not-Too-Distant Future. 2005, *Physica Scripta* Volume T, 117, 17
- Perlmutter, S. & Schmidt, B. P., Measuring Cosmology with Supernovae. 2003, in *Lecture Notes in Physics*, Berlin Springer Verlag, Vol. 598, *Supernovae and Gamma-Ray Bursters*, ed. K. Weiler, 195–217

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