

CVs and description of previous research achievements

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Main areas of research

Planetary dynamics: N-body simulations of extra-solar planetary systems; stability analysis of planetary motion and comparisons with the solar system; stability studies of planetary motion in binary stars and their dynamical evolution; terrestrial planet formation in binary stars; dynamical influence of passing stars on the stability of the binary star

Small body dynamics: N-body simulations of asteroids, comets and embryos in planetary systems of single and binary stars

Chaos indicators: Lyapunov Exponents, Fast Lyapunov Indicators, Local Lyapunov Numbers

Habitability: dynamical influence of Jupiter and Saturn on the habitability of Earth – Earth's eccentricity could be significantly higher if Saturn orbits the Sun at 8.7 au (instead of 9.5 au) or if Saturn's mass is similar to that of Jupiter; determination of habitable zones in binary star systems – showing the combined dynamical-radiative influence

Methods: Development of a semi-analytical method to define the location of secular resonances in circum-stellar habitable zones of binary stars

Internet-tools: [ExoStab](#) shows the stability maps for additional discovered planets, [SHaDoS](#) displays the regions affected by secular perturbations for circum-stellar planetary motion in binary stars

Link to publication listing on SAO/NASA Astrophysics Data System (ADS):

[https://ui.adsabs.harvard.edu/search/q=author%3A\("pilat-lohinger"%20OR%20"lohinger"\)&sort=date%20desc%2C%20bibcode%20desc&p_=0](https://ui.adsabs.harvard.edu/search/q=author%3A()

Curriculum vitae

2012-2020	sole female NFN-Project leader, at the Univ. Vienna; 2014 at the Univ.Graz
2002-2012	Project leader and senior Postdoc of several FWF projects
2001	awarded by the Hertha Firnberg fellowship (FWF)
2000	Postdoc at the Institute for Astronomy, University of Vienna
1999	Erwin Schrödinger grant (FWF) – Postdoc at the Observatory of Nice
1998	Postdoc at the Institute for Astronomy, University of Vienna
(1997	Maternity leave)
1996	Erwin Schrödinger grant (FWF) – Postdoc at the Observatory of Nice
1993-1995	Postdoc at the Institute for Astronomy, University of Vienna
1994	PhD dissertation (Dr. rer. nat.), Institute of Astronomy, University of Vienna
1992	Research fellowship for the Observatory of Nice (France)
1991	Diploma in astronomy, University of Vienna
1984-91	Studies of astronomy, University of Vienna

PI of the following research projects:

- 2012-2020 Habitability in Binary Star Systems (SP8 of NFN “Pathways to Habitability: From Disk to Active Stars, Planets to Life”), FWF project S11608-N16, EUR 960,571.94
- 2010-2015 Exoplanetary Systems: Architecture, Evolution, Habitability, FWF project P22603-N16, EUR 290,946.21
- 2008-2012 Evolution of planetary systems in double stars, FWF project P20216-N16, EUR 213,108.74
- 2007-2010 Dynamical evolution of planets in the habitable zone, FWF project P19569, EUR 225,110.32
- 2002-2006 Dynamical stability of extra-solar planets (Hertha Firnberg fellowship), FWF project T122, EUR 175,281.89
- 1996&1999 Small-body-dynamics in the outer solar system (Erwin Schrödinger grant), FWF J1208 – research fellowship at the Observatory of Nice (France)

Key cooperation partners

University of Vienna	Prof. R. Dvorak, Dr. Á. Bazzó, Dr. D. Bancelin
Austrian Academy of Sciences, Graz	Dr. H. Lammer, Dr. C. Lhotka
University of Washington and LSST, Seattle, WA, USA	Dr. S. Eggl
U Hawaii-Manoa and NASA Astrobiology Institute, HI, USA	Prof. N. Haghighipour
IMCCE Observatory of Paris, France	Dr. P. Robutel, Prof. D. Hestroffer
University of Namur, Belgium	Prof. A.-S. Libert
New York University Abu Dhabi	Dr. N. Georgakarakos

Invited lectures

- 2018 Binary stars and planets, ASPC II, St. Petersburg, Russia
- 2016 & 2017 Planets in binary stars at the INASAN Workshop, Moscow, Russia
- 2016 Habitability of planets in binary stars, Observatory of Paris, France
- 2011 Stability of planets in binary stars, IAU Symposium 282, Tatranska Lomnica, Slovakia
- 2010 Planets in binary stars, ESF Meeting, Obergurgl, Austria
- 2008 Binary stars and planets, ESLAB 2008, Symposium 42, Frascati, Italy
- 2000-2006 Planets in extra-solar systems, several CNRS winter schools in France

The 10 most important publications to-date

1. **Pilat-Lohinger, E.**, Dvorak, R.: Stability of S-type Orbits in Binaries. CMDA 82, 143-153, 2002, DOI: 10.1023/A:1014586308539

2. Ettl, S., **Pilat-Lohinger, E.**, Georgakarakos, N., Gyergyovits, M., Funk, B.: An Analytic Method to Determine Habitable Zones for S-Type Planetary Orbits in Binary Star Systems, *ApJ* 752, 11, 2012, DOI:10.1088/0004-637X/752/1/74
3. **Pilat-Lohinger, E.**, Bazsó, A., Funk, B.: A Quick Method to Identify Secular Resonances in Multi-planet Systems with a Binary Companion, *AJ*, 152, 139, 2016, DOI:10.3847/00046256/152/5/139
4. Bazsó, A., **Pilat-Lohinger, E.**, Ettl, S., Funk, B., Bancelin, D., Rau, G., Dynamics and habitability in circumstellar planetary systems of known binary stars, *MNRAS*, 466, 2017, p.1555, DOI:10.1093/mnras/stw3095, arXiv:1605.06769
5. **Pilat-Lohinger, E.**, The role of dynamics on the habitability of an Earth-like planet, *IJA*, 14, 2015, p.145, DOI:10.1017/S1473550414000469
6. **Pilat-Lohinger, E.**, Süli, A., Robutel, P., Freistetter, F.: The Influence of Giant Planets Near a Mean Motion Resonance on Earth-like Planets in the Habitable Zone of Sun-like Stars. *AJ*, 681, 1639-1645, 2008, DOI: 10.1086/587501
7. **Pilat-Lohinger, E.**, Robutel, P., Süli, A., Freistetter, F.: On the stability of Earth-like planets in multi-planet systems. *CMDA*, 102, 83-95, 2008, DOI: 10.1007/s10569-008-9159-0
8. Sándor, Z., Süli, A., Érdi, B., **Pilat-Lohinger, E.**, Dvorak, R.: A stability catalogue of the habitable zones in extrasolar planetary systems. *MNRAS*, 375, 1495-1502, 2007, DOI: 10.1111/j.1365-2966.2006.11414.x
9. **Pilat-Lohinger, E.**, Funk, B., Dvorak, R.: Stability limits in double stars. A study of inclined planetary orbits. *A&A*, 400, 1085-1094, 2003, DOI: 10.1051/0004-6361:20021811
10. Froeschle, C., Froeschle, Ch., **Lohinger, E.**: Generalized Lyapunov characteristic indicators and corresponding Kolmogorov like entropy of the standard mapping. *CMDA*, 56, 307-314, 1993, DOI: 10.1007/BF00699741

Additional achievements

Book author: Pilat-Lohinger, E., Ettl, S. and Bazsó Á. 2019, Vol. 4 of the series *Advances in Planetary Science*, World Scientific Publishing Co.Pte.Ltd., Singapore

Panel member of AstRoMap – the European roadmap for Astrobiology

Convener / Co-Convener of conference sessions (EPSC, JENAM, EPSC/DPS, AbSciCon)

2015-16 SOC, The Astrophysics of Habitability, Vienna, 8-12 February 2016.

Lecturer at the University of Thessaloniki (Sokrates programme)

Referee for several international journals like *ApJ*, *AJ*, *A&A*, *CeMDA*, *PASP*, *MNRAS*, *P&SS*

Reviewer of research proposals of DFG (Deutsche Forschungsgesellschaft) and NKFIH (Hungary)

Member of the reviewer panel for DFG Priority Program on Extra-solar planets

Member of the Editorial Board of the *International Journal of Astrobiology* 2012, 2014