

# Kuo-Chuan Pan (潘國全)

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## Education

**University of Illinois at Urbana-Champaign, Illinois, USA** 2007 – 2013  
Ph.D. in astronomy with computational science and engineering (CSE) option  
Dissertation Advisor: Paul Ricker  
Title: *The fates of binary companions in type Ia supernovae within the single-degenerate scenario*

**National Tsing Hua University, Hsinchu, Taiwan** 2000 – 2004  
B.Sc. in Physics

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## Experience

**Postdoctoral Scholar** 11/2016 – present  
Michigan State University, East Lansing, Michigan, USA  
Core-collapse supernova mechanism  
with Sean Couch

**Postdoctoral Scholar** 08/2013 – 10/2016  
Universität Basel, Basel, Switzerland  
Core-collapse supernova mechanism  
with Friedrich-Karl Thielemann

**Computational Science and Engineering Fellow** 09/2010 – 05/2012  
University of Illinois at Urbana-Champaign, Illinois, USA  
Type Ia supernova simulation and code optimization  
with Paul Ricker (ASTR) and Laxmikant V. Kalé (CS)

**Research Assistant** 09/2007 – 05/2008  
National Center for Supercomputing Applications, Illinois, USA  
Performed radio astronomy data analysis  
with Athol Kemball

**Research Assistant** 02/2006 – 06/2007  
Academia Sinica Institute of Astronomy and Astrophysics, Taipei, Taiwan  
Code development for hydrodynamics and magnetohydrodynamics  
with Chi Yuan

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## Honors & Awards

Visualization image on the cover photo on the Innovative and Novel Computational Impact on Theory and Experiment (INCITE) program press release (PI: Sean Couch), USA 2016

NVIDIA Spotlight Interview on GPU computing, NVIDIA, USA 2016

Bronze prize poster award in the NIC 2016 international conference, Niigata, Japan 2016

Computational Science and Engineering Fellowships, Urbana, Illinois, USA 2010 – 2012

228 Incident Memorial Scholarship, Taiwan 2001 – 2004

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## Activities & Service

Referee of the Computational Astrophysics and Cosmology (ComAC)	since 2015
Referee of the Nature Journal (Natur)	since 2014
Referee of the Astrophysical Journal (ApJ)	since 2013
Member of the American Astronomical Society	2010 – 2013
Military service (2 <sup>nd</sup> Lieutenant in Army)	2004 – 2005
President of astronomy club, National Tsing Hua University, Taiwan	2003
Advisor of astronomy club, National Hsinchu Girl's Senior High School, Taiwan	2002

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## Grants & Computing Allocations

<b>Piz-Daint Computing Allocations</b>	2016 – 2018
<i>The isotropic diffusion source approximation for the simulation of faint and faded supernova explosions with additional degrees of freedom in the equation of state</i>	
750,000 node-hours (2016.04 - 2017.03) on the CrayXC30, Piz Daint	
750,000 node-hours (2017.04 - 2018.03) on the CrayXC50, Piz Daint - Hybrid	
PI: Matthias Liebendörfer	
<b>Hubble Cycle 21</b>	2013
<i>A search for surviving companions of type Ia supernova in the Large Magellanic Cloud</i>	
PI: You-Hua Chu	
<b>Computational Science and Engineering Fellowship</b>	2010 – 2012
<i>Impact of Type Ia Supernova Ejecta on Companion Star and Subsequent Evolution of Remnant</i>	
\$23,000 per year	
PI: Kuo-Chuan Pan	

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## Teaching experience

Master thesis co-advisor, Daniel Billingham (co-advised with Matthias Liebendörfer)	2016
Thesis title: <i>Two Current Model for Stellar Explosions</i>	
Mentor, Nuclear Astrophysics	2013 – 2016
Lab instructor, PHYS 211 Mechanics	2013
Teaching assistant, ASTR 542 Theoretical Stellar Physics	2012
Teaching assistant, ASTR 540 Astrophysics	2012
Teaching assistant, ASTR 406 Galaxies in the Universe	2009
Teaching assistant, ASTR 121 Interstellar Medium and the Solar System	2009
Teaching assistant, ASTR 210 General Astronomy	2008
Advisor of astronomy club, National Hsinchu Girl's Senior High School, Taiwan	2002

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## Recent Talks

† <i>Self-consistent, neutrino-driven core-collapse supernova simulations</i>	
Physics Colloquium, National Tsing Hua University, Hsinchu, Taiwan,	2017/02
<i>Self-consistent, neutrino-driven core-collapse supernova simulations</i>	

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†invited

CompAS Seminar, Academia Sinica Institute of Astronomy and Astrophysics, Taipei, Taiwan,	2016/10
† <i>Multi-dimensional core-collapse supernova simulations with the isotropic diffusion source approximation</i> Astronomy seminar, Michigan State University, East Lansing, MI, USA	2016/04
<i>Multi-D simulations of core-collapse supernovae</i> CompAS Seminar, Academia Sinica Institute of Astronomy and Astrophysics, Taipei, Taiwan,	2016/01
<i>The isotropic diffusion source approximation for multi-D supernova simulations</i> The 2015 MICRA Meeting, Stockholm, Sweden,	2015/08
† <i>Multi-dimensional simulations of core-collapse supernovae</i> RIKEN Seminar, Wako, Saitama, Japan,	2015/08
<i>Multi-dimensional core-collapse supernova simulations with the IDSA for neutrino transport</i> Fifty-One-Ergs Conference, Raleigh, NC, USA,	2015/06
† <i>Multi-dimensional core-collapse supernova simulations with the IDSA for neutrino transport</i> Theory Seminar, Technische Universität, Darmstadt, Germany,	2015/05
† <i>Search for surviving companions in type Ia supernova remnants</i> HEP division seminar, Argonne National Lab, IL, USA,	2015/03
<i>Two-dimensional core-collapse supernova simulations with the isotropic diffusion source approximation for neutrino transport</i> Explosive stellar transients 2014 AG meeting at Bamberg, Germany,	2014/09
<i>Search for surviving companions in type Ia supernova remnants</i> CompAS Seminar, Academia Sinica Institute of Astronomy and Astrophysics, Taipei, Taiwan,	2013/07
<i>Search for surviving companions in type Ia supernova remnants</i> Astronomy colloquium, National Tsing-Hua University, Hsinchu, Taiwan,	2013/07
<i>The fates of binary companions in type Ia supernovae within the single-degenerate scenario</i> Nuclear, Particle and Astrophysics Seminar, Basel University, Basel, Switzerland,	2013/04
<i>Impact of type Ia supernova ejecta on binary companions within the single-degenerate scenario and subsequent evolution of post-impact remnant stars</i> ITC seminar, Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, USA,	2012/10
<i>Impact of type Ia supernova ejecta on binary companions within the single-degenerate scenario and subsequent evolution of post-impact remnant stars</i> CTA Theoretical Astrophysics and General Relativity Seminar, University of Illinois at Urbana-Champaign, IL, USA,	2012/09
<i>Impact of type Ia supernova ejecta on binary companions and subsequent evolution of post-impact remnant stars</i> Astronomy colloquium, National Tsing-Hua University, Hsinchu, Taiwan,	2012/09
† <i>Impact of type Ia supernova ejecta on binary companions and subsequent evolution of post-impact remnant stars</i> CSE Annual Research Symposium, University of Illinois at Urbana-Champaign, IL, USA,	2012/04
<i>Impact of type Ia supernova ejecta on binary companions</i> CTA Theoretical Astrophysics and General Relativity Seminar, University of Illinois at Urbana-Champaign, IL, USA,	2011/10
<i>Impact of type Ia supernova ejecta on binary companions</i> CFD-MHD Seminar, Academia Sinica Institute of Astronomy and Astrophysics, Taipei, Taiwan,	2011/07
† <i>Impact of type Ia supernova ejecta on binary companions</i> 9th Annual Workshop on Charm++ and its Applications, University of Illinois at Urbana-Champaign, IL, USA,	2011/04

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†invited

† <i>Impact of type Ia supernova ejecta on binary companions</i> CSE Annual Research Symposium, University of Illinois at Urbana-Champaign, IL, USA,	2011/04
<i>Impact of type Ia supernova ejecta on a helium star binary companion</i> Astronomy colloquium, National Tsing-Hua University, Hsinchu, Taiwan,	2010/01
<i>Type Ia supernovae in close binary systems</i> CFD-MHD Seminar, Academia Sinica Institute of Astronomy and Astrophysics, Taipei, Taiwan,	2009/01

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## References

### Professor Paul Ricker

Ph.D. dissertation advisor

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University of Illinois at Urbana-Champaign  
1002 W. Green Street, Urbana, IL 61801, USA

### Professor Friedrich-Karl Thielemann

Postdoc advisor

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Klingelbergstrasse 82, CH-4056 Basel, Switzerland

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Collaborator, Ph.D. Thesis committee member

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Collaborator, Ph.D. Thesis committee member

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### PD Dr. Matthias Liebendörfer

Collaborator

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## Collaborators and other affiliations

**Collaborators and Co-editors** (Total: 17) F.-K. Thielemann (Universität Basel); M. Liebendörfer (Universität Basel); M. Hempel (Universität Basel); R. Cabezón (Universität Basel); T. Kuroda (Universität Basel); O. Heinemann (Universität Basel); K. Ebinger (Universität Basel); P. M. Ricker (University of Illinois at Urbana-Champaign); A. Kembell (University of Illinois at Urbana-Champaign); L. Kale (University of Illinois at Urbana-Champaign); R. E. Taam (Academia Sinica Institute of Astronomy and Astrophysics); Y.-H. Chu (Academia Sinica Institute of Astronomy and Astrophysics); A. Perego (Technische Universität Darmstadt); G. Dubus (Institut de Planétologie et d'Astrophysique de Grenoble; IPAG); P. Martin (Institut de Recherche en Astrophysique et Planétologie; IRAP); S. M. Couch (Michigan State University); E. O'Connor (North Carolina State University)

**Graduate Advisors and Postdoctoral Sponsors** (Total: 3) S. M. Couch (Michigan State University); F.-K. Thielemann (Universität Basel); P. M. Ricker (University of Illinois at Urbana-Champaign, PhD advisor)

**Graduate Advisee** (Total: 1) D. Billingham (Master degree, Universität Basel)