

Division of Mathematical and Physical Sciences	Research field	Astrophysics	Lab. ID
			MP12
Laboratory web site	<a href="http://astro.s.kanazawa-u.ac.jp">http://astro.s.kanazawa-u.ac.jp</a>		
Research subjects			
<p>In the astrophysics lab, we develop X-ray/gamma-ray detectors for use on astronomy satellites, and observationally research the early Universe and the structural formation. A gamma-ray polarization detector was mounted on the solar sail IKAROS and launched in 2010, and we succeeded in detecting gamma-ray polarization from gamma-ray bursts (GRBs). A cryogenic high-resolution X-ray spectrometer that we developed with JAXA, NASA and other research institutions is now mounted on Astro-H and will be launched in 2016. For the future, we are now planning small satellites and making initial development of onboard instruments. We also analyze data obtained with satellites such as Suzaku, Swift, Fermi to research in astrophysics and cosmology. We are developing an educational course to develop a 50 kg satellite in collaboration between science and engineering divisions.</p>			
Master/Doctor course: Education policy, curriculum, typical activity in the laboratory			
<p>At the beginning of the first year of the master course, your supervisor is determined based on your interest and your course after graduation. You will make your experimental study and/or data analysis under the supervisor. There is an entire meeting and seminar once per week. All the members should join them. You are expected to report your progress and share information with each other in the meeting. In the seminar, a textbook is selected based on students' interest. You are responsible to lecture in turn.</p>			
Daily life in the laboratory, etc.			
<p>Except for the entire/group meetings and the seminar, you won't have a temporal restriction. You are expected to control your daily life by yourself. Students share one room that has a small space you can relax. You can freely chat with other students and teachers. We have a welcome party and a year-end party as regular lab activities, and also several irregular events.</p>			
Message or comments by the laboratory faculty staffs			
<p>We welcome those who want to develop detectors for observing Universe by yourself, and to unveil mysteries of the Universe through observations. Astrophysics may not be directly useful nor helpful for our daily life. However, it is one of the most fundamental research themes for humankind. How wonderful it is that we the humankind who cannot live away from the small planet earth tackle mysteries of the Universe and reveal them one by one. Through experiments and data analysis, you are expected to learn physics, and also how to progress with research and development. We welcome those who wish to go to the doctor course. We also welcome who plan to find a job after you finish the master course. You won't have any difficulties to find a job after you learn astrophysics in the graduate school.</p>			
Recent Master theses in these 3 years (+ more if appropriate)			
year.month	Thesis title (including English translation of Japanese thesis title)		
2017.3	Study of the Virgo cluster's intracluster medium observed with Suzaku		
2017.3	Improvements of TES X-ray microcalorimeter readout for better spectral resolution		
2017.3	Development of digital system for the wide field X-ray imaging detector aboard Kanazawa-SAT <sup>3</sup>		
2017.3	Sensitivity improvement of matrix type gamma-ray polarimeter in low energy band		
2016.3	Study for Optimal Operation of TES X-ray Microcalorimeters on an Adiabatic Demagnetization Refrigerator		
2016.3	Study of Extended Soft X-ray Emission around the Elliptical Galaxy M86 and Its Origin with Suzaku		
2016.3	Study of Photospheric Emission Model for Gamma-Ray Bursts Observed by the GBM Detector onboard the Fermi Satellite		
2016.3	Development of prototype model of X-ray imaging detectors onboard Kanazawa micro satellite - Kanazawa-SAT <sup>3</sup>		
2015.3	Research for improving temperature control of adiabatic magnetization refrigerator for X-ray microcalorimeter operation		
2015.3	Performance test for the next generation gamma-ray polarimeter with highly polarized synchrotron radiation		
2015.3	Development of X-ray imaging detector with high gain analog ASIC for high redshift gamma-ray bursts		
2014.3	Research for improving spectroscopic performance of TES-type X-ray microcalorimeters operated in ADR		
2014.3	Development of matrix type of gamma-ray polarimeter with one photon counting device		
2014.3	Development of X-ray imaging detector with coded aperture mask system for high redshift gamma-ray bursts		

2013.3	Research for improving X-ray microcalorimeter operating environment in adiabatic demagnetization refrigerator
2013.3	Study of radiation mechanism of gamma-ray bursts and Crab nebula with gamma-ray polarization
Recent Doctoral theses in these 3 years (+ more if appropriate)	
year.month	Thesis title (including English translation of Japanese thesis title)
2017.3	X-ray study of extended emission around the elliptical galaxy M 86
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