efficiency of the particle injection and acceleration to previous levels, starting the same series of events in an ongoing cycle of increasing and decreasing particle acceleration.

[구 HT-03] X-ray properties of PWNe measured with the NuSTAR telescopes

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Young pulsar wind nebulae, powered by energetic central pulsars, are often observed as bright extended sources in the X-ray band. They are believed to accelerate electrons and positrons to very high energy and can possibly explain the positron excess observed by Fermi and AMS. The electron distribution in these PWNe can be best studied by X-ray satellites because emission in the X-ray band is produced by direct synchrotron radiation of the electrons and positrons. We present NuSTAR studies of PWNe and discuss the implication. Future studies to help further our understanding of particle acceleration will be briefly discussed.

[구 HT-04] Pair-wise peculiar velocity and the redshift space distortion

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The line-of-sight component in the relative motion of galaxy pairs sources the redshift space distortion (RSD) in galaxy surveys. By knowing the probability density function (PDF) of pair-wise motions and projecting it to the line-of-sight direction, one can compute the RSD effect precisely. I present the pair-velocity PDF of dark matter and galaxies in the Horizon-run 4 simulation. I also derive a model motivated by the perturbation theory which fits the results fairly well. I also discuss the application of the model in constraining the cosmology.

[석 HT-05] PWN SED modeling: stationary and time-dependent leptonic scenarios

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We develop a model for broadband spectral energy distribution (SED) of Pulsar Wind Nebulae (PWNe). The model assumes that electrons/positrons in the pulsar wind are injected into and stochastically accelerated in the pulsar termination shock. We consider two scenarios: a stationary one-zone case and a time-evolving multi-zone case. In the latter scenario, flow properties in the PWNe (magnetic field, bulk speed) are modeled to vary in time and space. We apply the model to the broadband SED of the pulsar wind nebula 3C 58. From the modeling, we find that a broken power-law injection is required with the maximum electron energy of ~200 TeV.

천문우주관측기술

[구 AI-01] Korean 8m Class Optical Facility: Gemini Observatory

Narae Hwang, Minjin Kim. Soung-Chul Yang, Ho-Gyu Lee, Jae-Joon Lee, In-Soo Yuk, Yun-Kyeong Sheen, Byeong-Gon Park
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As of July 24th 208, Korea Astronomy and Space Science Institute (KASI) has entered into a formal partnership with the Gemini Observatory. The Gemini Observatory has been operated by Association of Universities for Research in Astronomy (AURA) on behalf of the International Partnership that includes Argentina, Brazil, Canada, Chile, United States, and Korea as the new partner country. Effective from the 209A Call for Proposals (CfP), any researchers affiliated with Korean institutes are eligible to apply for various observing opportunities in both hemispheres covered by Gemini North in Hawaii and by Gemini South in Chile. We are going to share the importance and long-term perspectives of the KASI-Gemini Partnership in the context of the next decade of Korean optical astronomy researches.

[구 AI-02] Development Plan for Immersion Grating High-Dispersion Infrared Spectrographs (담금격자 적외선 고분산 분광기 개발 계획)

Sungho Lee, Chan Park, Narae Hwang, Sanghyuk Kim, Jae-Joon Lee, Ueejeong Jeong, In-Soo Yuk, Byeong-Gon Park