Gyeong-Hwan Byun

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EDUCATION

2024-present **Combined M.S./Ph.D. Program in Astronomy**
Yonsei University, Department of Astronomy
Advisor: Prof. Sukyoung K. Yi

2018-2023 **B.S., Astronomy and Physics (Double Major)**
Yonsei University

RESEARCH INTERESTS

Galaxy evolution in merging clusters; gas removal and star formation; cluster-merger-induced shocks and their associations with galaxies; dust and galaxy morphology; cosmological simulations.

PUBLICATIONS

First-author paper

How Dust Models Shape High-z Galaxy Morphology: Insights from the NewCluster Simulation

Gyeong-Hwan Byun, J. K. Jang, Zachary P. Scofield, Eunmo Ahn, Maarten Baes, Yohan Dubois, San Han, Seyoung Jeon, Juhan Kim, Christophe Pichon, Jinsu Rhee, Francisco Rodríguez Montero, Sukyoung K. Yi

2025. The Astrophysical Journal, 992, 92.

doi:10.3847/1538-4357/adfed9 | ADS

Co-authored papers

On the Origin of Intracluster Light Based on the High-resolution Simulation, NewCluster

Seyoung Jeon, Emanuele Contini, San Han, Jinsu Rhee, Garreth Martin, Juhan Kim, Jaehyun Lee, Taysun Kimm, Christophe Pichon, **Gyeong-Hwan Byun**, Yohan Dubois, Corentin Cadiou, J. K. Jang, Sukyoung K. Yi

2026. The Astrophysical Journal, 998, 30.

doi:10.3847/1538-4357/ae2eaa | ADS

Introducing NewCluster: the first half of the history of a high-resolution cluster simulation

San Han, Sukyoung K. Yi, Yohan Dubois, Jinsu Rhee, Seyoung Jeon, J. K. Jang, **Gyeong-Hwan Byun**, Corentin Cadiou, Juhan Kim, Taysun Kimm, Christophe Pichon

2026. Astronomy & Astrophysics, 705, A169.

doi:10.1051/0004-6361/202556291 | ADS

CONFERENCE PRESENTATIONS

The 'Dusty' path to galaxy morphology insights from the NewCluster simulation
245th Meeting of the American Astronomical Society

How Dust Models Shape Galaxy Morphology: Insights from the NewCluster Simulation
RUM25: RAMSES User Meeting 2025

How Dust Models Shape Galaxy Morphology: Insights from the NewCluster Simulation
SKIRT Days 2025

How Dust Models Shape Galaxy Morphology: Insights from the NewCluster Simulation
112th Meeting of the Korean Astronomical Society

TEACHING EXPERIENCE

Spring 2025	**Teaching Assistant, Galaxy & Universe 2** Yonsei University
Fall 2024	**Teaching Assistant, Cosmology** Yonsei University
Spring 2024	**Teaching Assistant, Galaxy & Universe 2** Yonsei University

HONORS AND AWARDS

Outstanding Graduate Student Paper Award
24th Jeong Seong-gi Alumni Award, College of Science
제24회 이과대학 정성기 동문 대학원생 우수논문상

SOFTWARE AND TECHNICAL SKILLS

Programming: Python, Fortran.

ShockFinder: Developer. Identifies shocks in simulation data and analyzes their Mach numbers and energy dissipation; explores grouping shock fronts and identifying associations with galaxies.

github.com/byunastro/ShockFinder

MILITARY SERVICE

Feb 2020- Aug 2021	**Military service, Intelligence** Squad Leader