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Eftal Gezer

PhD student in physics at Gebze Technical University, and a lecturer in Dogus University. Within the scope of computational physics and astrobiology, using density functional theory and molecular dynamics (SIESTA, LAMMPS) to study fullerenes, PAHs and other carbon nanostructures as catalysts and building blocks in prebiotic chemistry. Active in the COST NanoSpace action on carbon molecular nanostructures in space, with a growing interest in connecting computational modelling to laboratory and observational astrochemistry.

Education

<i>Sep 2024 – ongoing</i>	Gebze Technical University PhD, Physics Gebze, Turkey
<i>Feb 2022 – Sep 2024</i>	Gebze Technical University MSc, Physics Gebze, Turkey
<i>Sep 2013 – Sep 2020</i>	Gebze Technical University (formerly Gebze Institute of Technology) BSc, Physics Gebze, Turkey
<i>Oct 2015 – Sep 2016</i>	University of Duisburg-Essen Erasmus+ Exchange Program, Physics Duisburg, North Rhine-Westphalia, Germany
<i>Oct 2014 – ongoing, intermittent</i>	Anadolu University BA, Philosophy Eskişehir, Turkey

Research Experience

<i>Oct 2024 – ongoing</i>	Lecturer Doğuş University, Advanced Vocational School İstanbul, Turkey
<i>May 2022 – May 2024</i>	Project fellow (TÜBİTAK 1001 Project 122F022) Doğuş University İstanbul, Turkey

Jun 2015 – Sep 2015 **Intern**

Middle East Technical University, Department of Physics
Ankara, Turkey

Teaching Experience

Courses taught at Doğuş University, Faculty of Engineering and Natural Sciences and Vocational School, in English and Turkish.

<i>PHYS 101</i>	Physics I (Bachelor, English) 2024/2025 Fall, 2025/2026 Fall, 2026/2027 Fall
<i>MSD 109</i>	Physics I (Associate, Turkish) 2024/2025 Fall
<i>PHYS 102</i>	Physics II (Bachelor, English) 2024/2025 Spring, 2025/2026 Spring, 2025/2026 Summer
<i>PHYS 224</i>	Modern Physics I (Bachelor, English) 2024/2025 Summer, 2025/2026 Fall
<i>FİZ 224</i>	Modern Physics I (Bachelor, Turkish) 2024/2025 Fall
<i>PHYS 122</i>	Electricity and Magnetism (Bachelor, English) 2025/2026 Spring
<i>FİZ 223</i>	Light and Optics (Bachelor, Turkish) 2024/2025 Fall, 2025/2026 Fall
<i>PHYS 371</i>	Solid State Physics for Engineers (Bachelor, English) 2026/2027 Fall
<i>MM 242</i>	Dynamics (Bachelor, Turkish) 2025/2026 Summer
<i>MKT 105</i>	Fundamental Mechanics (Associate, Turkish) 2024/2025 Fall, 2025/2026 Fall, 2026/2027 Fall
<i>ELK 108</i>	Basic Electronics (Associate, Turkish) 2024/2025 Spring (2 sections), 2025/2026 Spring
<i>ELT 201 / DDE 1003</i>	Electronic Sensors (Associate, Turkish) 2026/2027 Fall (2 sections)
<i>ELT 101</i>	Fundamentals of Electronics Technology (Associate, Turkish) 2024/2025 Fall
<i>ELT 274</i>	Energy Management (Associate, Turkish) 2025/2026 Spring
<i>ELT 290 / 292</i>	Electronics Technology Internship & Guided Study (Associate, Turkish) 2025/2026 Spring

Attended independent courses, certificates, etc.

2023 COST NanoSpace JWST Training School

Contributors: COST Action CA21126 - Carbon molecular nanostructures in space (NanoSpace), Instituto de Astrofísica de Canarias, European Space Agency, Space Telescope Science Institute, Centro de Astrobiología, University of Oxford, Telespazio UK for the European Space Agency, ESAC, Instituto de Nanociencia y Materiales de Aragón

Tenerife, Canary Islands, Spain

2021 2021 Sagan Summer Workshop

Contributors: NASA Exoplanet Science Institute, California Institute of Technology

Online

2021 Physics of Life from the perspective of early career researchers

Contributors: Physics of Life UK, University of Warwick, University of Sheffield, Imperial College London, University of Glasgow, John Innes Centre, University of Exeter

Online

2021 The Institutions of Extraterrestrial Liberty

Contributors: UK Centre for Astrobiology, University of Edinburgh

Online

2021 Physics of Emergent Behaviour III

Contributors: Imperial College London

Online

2015 Molecular Dynamics Simulation of Proteins: Fundamentals and Applications

Contributors: TOBB Economy and Technology University

Ankara, Turkey

2015 Scientific Computing with Python and R

Academic Information Technologies Conferences

Contributors: İnternet Teknolojileri Derneği (Association of Internet Technologies), Bilkent University, Anadolu University

Eskişehir, Turkey

2014 Computation Techniques Summer School for Physicists and Astronomers

Feza Gürsey Summer Schools

Contributors: Bilim Akademisi The Science Academy, Turkish Astronomical Society, Boğaziçi University.

2014 Cosmology and Astroparticle Physics Summer School

Feza Gürsey Summer Schools
Contributors: Bilim Akademisi The
Science Academy, Koç University, Boğaziçi
University.
Istanbul, Turkey

2014 **Quantum Field Theory Winter School**
Feza Gürsey Winter Schools
Contributors: Bilim Akademisi The
Science Academy, İstanbul Technical University, Boğaziçi
University.
Istanbul, Turkey

Before 2013 Several other IT related courses.

Awards & Grants

October 2024 Grant: E-COST-GRANT-CA21126-a3bd7e19 — Online survey for the cosmic nanocarbon inventory database (COST Action CA21126)

Feb 2021 Award: 2020-2021 Academic Year Fall Semester Certificate of Honour (Anadolu University)

Apr 2016 Scholarship: Erasmus + Student Exchange Program

Oct 2015 Scholarship: Erasmus + Student Exchange Program

Feb 2015 Award: 2014-2015 Academic Year Fall Semester Certificate of Honour (Anadolu University)

Skills & Activities

Skills Computational & Programming: SIESTA, LAMMPS, Python, R, C#, Scilab, SQL, Scientific Computing, Database Programming, Computer Programming.
Research & Analytical: Numerical Methods, Data Analysis, Scientific Method, Research Ethics, Statistics, Information Technology, and other IT-related skills.

Languages English (Fluent), German (Beginner, A2, Erasmus+ exchange year), Turkish (Native)

Interests Astrobiology, SETI, quantum information, optics, particle physics, history and philosophy of science.

Conference Proceedings

1. E. Gezer, D. Erbahar. Catalytic Role of C₆₀ Fullerene in Miller-Urey Experiment Reactions: An Ab Initio Study on the Origin of Life. Conference proceeding at: 77th International Astronautical Congress, Antalya, 2026.

2. İ. Sincer, E. Gezer, M. Polat, S. Çelik, D. Gocmen, E. Uzun, M. K. Erdim, D. Erbahar. NanoSpace Knowledge Hub: An interdisciplinary, tool-integrated Science 4.0 database for cosmic nanocarbons in space. Interactive presentation at: *77th International Astronautical Congress, Antalya, 2026*.
3. E. Gezer, S. Celik, D. Gocmen, M. Polat, I. Sincer, M. Erdim, E. Uzun, D. Erbahar. NanoSpace Knowledge Hub: an interdisciplinary, tool-integrated Science 4.0 cosmic nanocarbon inventory database. Conference proceeding at: *Final NanoSpace Joint Scientific Meeting, La Laguna, Tenerife, 2026*.
4. E. Gezer, S. Celik, D. Gocmen, M. Polat, I. Sincer, M. Erdim, E. Uzun, D. Erbahar. A Lightweight PAH Spectral Analysis Tool For Online Astrophysical Diagnostics. Conference proceeding at: *Final NanoSpace Joint Scientific Meeting, La Laguna, Tenerife, 2026*.
5. E. Gezer, S. Celik, O. N. Nalbantoglu, D. Erbahar. Recent status of the cosmic nanocarbon database: Where are we and how to contribute? Conference proceeding at: *3rd NanoSpace Joint Scientific Meeting, 2025*.
6. S. Celik, O. N. Nalbantoglu, E. Gezer, D. Erbahar. Technical outline of the cosmic nanocarbon database and call for collaboration. Poster presented at: *3rd NanoSpace Joint Scientific Meeting, 2025*.
7. E. Gezer, D. Erbahar. C60 catalysis in the prebiotic origin of life. Conference proceeding at: *HeteroNanoCarb 2025, 2025*.
8. D. Erbahar, C. Çelebi, O. Unverdi, M. Oztay, T. Karakoyun Barandır, E. Gezer, D. Ickecan, S. Ipek, C. Kaplan. Testing nanotribology theories on heterogeneous carbon interfaces. Conference proceeding at: *HeteroNanoCarb 2025, 2025*.
9. E. Gezer, D. Erbahar. Cosmic nanocarbon inventory database proposal: A sustainable, open-access and open-source Science 4.0 platform. Oral talk at: *NanoSpace 2nd Joint Scientific Meeting, Istanbul, 2024*.
10. E. Gezer, D. Erbahar. Fullerenes as versatile catalysts in prebiotic reactions. Oral talk at: *NanoSpace 2nd Joint Scientific Meeting, Istanbul, 2024*.
11. E. Gezer, D. Erbahar. Fullerenes as versatile catalysts: Unleashing their catalytic potential in the origin of life. Poster presented at: *Molecular Origins of Life, Munich 2023, Online, 2023*.
12. D. Erbahar, C. Çelebi, O. Unverdi, S. Ipek, D. Ickecan, E. Gezer, V. Karakoyun, T. Sirin, M. Gozek. Testing the Nanotribology Theories on Twisted Bilayer Graphene. Oral talk at: *APS March Meeting 2023, Las Vegas, 2023*.
13. E. Gezer, D. Erbahar, Catalytical Properties of C60 in Tholin Reactions. Oral talk at: *1st COST NanoSpace Joint Scientific Meeting, Ljubjana, 2023*.
14. E. Gezer, D. Erbahar. Catalytic properties of fullerenes in origin of life. Poster presented at: *Molecular Origins of Life, Munich 2022, Online, 2022*. [\[RG\]](#)
15. E. Gezer, D. Erbahar. Fullerenes In The Origin Of Life. Poster presented at: *GTU 6th Symposium for Graduate Research 2022, Gebze, 2022*. [\[RG\]](#)
16. E. Gezer. Lake Salda, a Mars analogue and an origin of life field in Turkey: past, present, future of protection concerning astrobiology. Poster presented at: *Molecular Origins of Life, Munich 2021, Online, 2021*. [\[RG\]](#)

17. E. Gezer. Selection pressure: the latitudinal biodiversity gradient is driven by the latitudinal variation of ultraviolet radiation. Poster presented at: *Molecular Origins of Life, Munich 2020*, Online, 2020. [RG]
18. E. Gezer. Estimating the number of water-bearing planets on the Milky Way galaxy. Poster presented at: *3rd METU Astrobiology Conference*, Ankara, 2019. [RG]

Publications

1. K. Hansen, D. A. Garcia Hernandez, E. E. B. Campbell, D. Erbahar, A. Domaracka, C. Jäger, C. Ewels, P. Umek, S. Kwok, J. Cami, P. Ehrenfreund, H. Linnartz, A. Manchado, E. Peeters, N. L. J. Cox, J. Bernard-Salas, E. K. Campbell, A. Monreal-Ibero, B. H. Foing, J. Smoker, M. Elyajouri, A. Ebenbichler, J. Th. van Loon, J. Bouwman, A. Farhang, F. Salama, C. Joblin, G. Mulas, U. Jacovella, M. A. Gómez-Munoz, R. Barzaga, T. Huertas-Roldan, H. Mohan, M. Bartkowski, S. Giordani, G.-L. Hou, J. J. Díaz-Luis, J. Alcolea, D. Tafuya, V. Bujarrabal, N. Došlić, T. Došlić, E. Catalano, M. Yesiltas, P. Ferrari, S. Brünken, G. Berden, J. M. Bakker, J. Oomens, B. Redlich, A. Pitanti, B. Bertoni, L. Vicarelli, P. Lambert, M. Cojocari, G. Fedorov, Yu. Svirko, P. Kuzhir, M. Hochlaf, O. B. Malcioglu, O. Pusuluk, A. Potapov, E. Gezer, A. Lombardi, S. A. Sadjadi, Q. A. Parker, T. Wakabayashi, M. H. Stockett, E. K. Ashworth, J. N. Bull, M. M. Fárník, H. Zettergren, H. T. Schmidt, C. S.-C. Yang, F. Jin, S. Trivedi, U. Hommerich, L. Nemes, A. C. Samuels, L. Ganner, M. Kappe, E. Gruber, S. Suriyaprasanth, D. Gupta, K. Tórkési, Z. Li, X. H. Zhou, J. M. Gong, R. G. Zeng, Z. J. Ding, D. A. Kalchevski, D. Trifonov, S. Kolev, T. Milenov, C. Pardanaud, J. Dezalay, J. A. Noble, M. A. Caro, G. Shmavonyan, L. Misakyan, A. Shmavonyan, I. Sciriha, M. McCoustra, F. Koch, I. Schubert, C. Trautmann, M. E. Toimil-Molares, B. Kerkeni, D. Talbi, C. P. Hsu, G. Ouerfelli, H. H. Chuang, K.-J. Chuang, Y.-J. Chen, Misagh Ghadiri, M. Nabid, E. Villaver, M. Manteiga. Roadmap on carbon molecular nanostructures in space. *The European Physical Journal D*, 79, 94 (2025). [DOI]
2. E. Gezer. Aziz Augustinus'un "Tanrı Devleti Üzerine" yapının tarih felsefesi açısından değerlendirilmesi. 2022. (Preprint) [RG]
3. V. Meadows, H. Graham, V. Abrahamsson, Z. Adam, E. Amador-French, G. Arney, L. Barge, E. Barlow, A. Berea, M. Bose, D. Bower, M. Chan, J. Cleaves, A. Corpolongo, M. Currie, S. Domagal-Goldman, C. Dong, J. Eigenbrode, A. Enright, T. J. Fauchez, M. Fisk, M. Fricke, Y. Fujii, A. Gangidine, E. Gezer, D. Glavin, L. Grenfell, S. Harman, R. Hatzenpichler, L. Hausrath, B. Henderson, S. S. Johnson, A. Jones, T. Hamilton, K. Hickman-Lewis, L. Jahnke, B. Kacar, R. Kopparapu, C. Kempes, A. Kish, J. Krissansen-Totton, W. Leavitt, Y. Komatsu, T. Lichtenberg, M. Lindsay, C. Maggiori, D. D. Marais, C. Mathis, Y. Morono, M. Neveu, G. Ni, C. Nixon, S. Olson, N. Parenteau, S. Perl, R. Quinn, C. Raj, L. Rodriguez, L. Rutter, M. Sandora, B. Schmidt, E. Schwieterman, A. Segura, F. Sekerci, L. Seyler, H. Smith, G. Soares, S. Som, S. Suzuki, B. Teece, J. Weber, F. Wolfe-Simon, M. Wong, H. Yano, L. Young. Community Report From the Biosignatures Standards of Evidence Workshop. *arXiv*, 2022. (Preprint) [DOI]
4. E. Gezer. Fichte, Schelling ve Hegel'in "Alman İdealistleri" olarak sınıflandırmaları üzerine bir tartışma. 2021. (Preprint) [RG]
5. UV radiation as an accelerating factor of Earth's life genesis [RG]

Thesis

1. E. Gezer. Fullerenes in the origin of life. Master's thesis, Gebze Technical University, Gebze, 2024. [CoHE Thesis Centre: 10500679]

Codes/Softwares

1. E. Gezer. eftalgezer/ANIAimator: v0.2.2. *Zenodo*, 2023. [\[DOI\]](#)
2. E. Gezer. eftalgezer/SIESTAstepper: v2.1.0 (v2.1.0). *Zenodo*, 2022. [\[DOI\]](#)
3. E. Gezer. eftalgezer/ANIAimator: v0.2.1. *Zenodo*, 2022. [\[DOI\]](#)
4. E. Gezer. eftalgezer/ANIAimator: v0.2.0 (v0.2.0). *Zenodo*, 2022. [\[DOI\]](#)
5. E. Gezer. eftalgezer/ANIAimator: v0.1.0 (v0.1.0). *Zenodo*, 2022. [\[DOI\]](#)
6. E. Gezer. eftalgezer/ANIAimator: v0.0.1 (v0.0.1). *Zenodo*, 2022. [\[DOI\]](#)
7. E. Gezer. eftalgezer/SIESTAstepper: v2.0.0 (v2.0.0). *Zenodo*, 2022. [\[DOI\]](#)
8. E. Gezer. eftalgezer/SIESTAstepper: v1.2.3 (v1.2.3). *Zenodo*, 2022. [\[DOI\]](#)
9. E. Gezer. eftalgezer/SIESTAstepper: v1.2.2 (v1.2.2). *Zenodo*, 2022. [\[DOI\]](#)
10. E. Gezer. eftalgezer/SIESTAstepper: v1.2.1 (v1.2.1). *Zenodo*, 2022. [\[DOI\]](#)
11. E. Gezer. eftalgezer/SIESTAstepper: v1.2.0 (v1.2.0). *Zenodo*, 2022. [\[DOI\]](#)
12. E. Gezer. eftalgezer/SIESTAstepper: v1.1.0 (v1.1.0). *Zenodo*, 2022. [\[DOI\]](#)
13. E. Gezer. eftalgezer/SIESTAstepper: v1.0.0 (v1.0.0). *Zenodo*, 2022. [\[DOI\]](#)
14. E. Gezer. eftalgezer/SIESTAstepper: v0.4.2 (v0.4.2). *Zenodo*, 2022. [\[DOI\]](#)
15. E. Gezer. eftalgezer/SIESTAstepper: v0.4.1 (v0.4.1). *Zenodo*, 2022. [\[DOI\]](#)
16. E. Gezer. eftalgezer/SIESTAstepper: v0.4.0 (v0.4.0). *Zenodo*, 2022. [\[DOI\]](#)
17. E. Gezer. eftalgezer/SIESTAstepper: v0.3.0 (v0.3.0). *Zenodo*, 2022. [\[DOI\]](#)
18. E. Gezer. eftalgezer/SIESTAstepper: v0.2.0 (v0.2.0). *Zenodo*, 2022. [\[DOI\]](#)
19. E. Gezer. eftalgezer/SIESTAstepper: v0.1.0 (v0.1.0). *Zenodo*, 2022. [\[DOI\]](#)

Workshop Attended

1. NfoLD/NExSS Standards of Evidence for Life Detection Community Workshop, 2021.

Editorship

1. E. Gezer, D. Erbahar, D. A. García Hernández (eds.). *NanoSpace 2nd Joint Scientific Meeting & MC Meeting: Book of Abstracts*. Erbahar Research Lab, Istanbul, 2024.

Projects

1. Carbon molecular nanostructures in space (NanoSpace) (COST Action CA21126) (Oct 2022 – Oct 2026)
 - Local Organising Committee member of the Action's 2nd joint scientific meeting
 - Editor of the Action's 2nd joint scientific meeting's book of abstracts
 - Head of the Database Strategy Group
 - Organisator of the NanoSpace DSG Hackathon
3. Online survey for the cosmic nanocarbon inventory database (E-COST-GRANT-CA21126-a3bd7e19)
 - Coordinator
2. Investigation of Nanotribological Properties of Twisted Bilayer Graphene Structures (TÜBİTAK 1001 Project 122F022) (May 2022 – May 2024)
 - Project fellow

Organisational Experience

1. NanoSpace DSG Hackathon, BAU, Istanbul, Turkey, 2025
 - Organisator
2. 1st DOU Physics Competition, Doğuş University, Istanbul, Turkey, 9 May 2025
 - Organising Committee member
3. NanoSpace 2nd Joint Scientific Meeting, BAU, Istanbul, Turkey, 2024.
 - Local Organising Committee member
 - Editor of the book of abstracts

Outreach & Public Engagement

1. astrobiyoloji.org — Turkish-language astrobiology portal
 - Founder & Maintainer
2. NASA International Space Apps Challenge 2025 (local chapter), 4–5 October 2025
 - Co-jury

Press Coverage

1. Yaşamın kökenlerini araştıran Türk akademisyene AB'den destek (9 June 2022). İhlas News Agency. [[Link](#)]