

## Center for Mathematical and Applied Research

Cosmology Laboratory

Head of laboratory

## Publications

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*Article*

### **Cosmic voids and the kinetic analysis V. Hubble tension, the cosmological constant, and aperiodic filaments**

V.G.Gurzadyan, V.M.Chechetkin, N.N.Fimin

Astronomy and Astrophysics 2026 A70

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*Article*

### **Cosmic voids and the kinetic analysis: IV. Hubble tension and the cosmological constant**

Gurzadyan V.G., Fimin N. N., Chechetkin V. M.

Astronomy and Astrophysics 2025 A252

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### **Messier 90 galactic halo rotation in the microwaves**

V.G.Gurzadyan, De Paolis F., G.Yegoryan, A.Kashin, Qadir A., Tahir N., Jetzer Ph.

Astronomy and Astrophysics 2025 L2

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*Article*

### **Kolmogorov analysis of JWST deep survey galaxies**

V.G.Gurzadyan, A.A.Kocharyan, N.Galikyan

Astronomy and Astrophysics 2025 L21

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### **On the Earth's tidal perturbations.II. LARES 2 satellite**

V.G.Gurzadyan, H.G.Khachatryan, S.Mirzoyan, A.Paolozzi, I. Ciufolini

European Physical Journal Plus 2025 512

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### **Vishap stelae as cult dedicated prehistoric monuments of Armenian Highlands: data analysis and interpretation**

Vahe Gurzadyan, Arsen Bobokhyan

npj Heritage Science 2025 1-12

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### **Probing lambda-gravity with Bose-Einstein condensates**

V. Gurzadyan, I. Fuentes, A. Belyaev, H. A. Fernandez-Melendez

Physical Review Research 2025 L042051

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### **Focus point on tensions in cosmology from early to late universe: part II: new directions in the light of observations from the most modern astronomical facilities**

V.G.Gurzadyan, E. Di Valentino, S.Capozziello

European Physical Journal Plus 2025 1011

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*Article*

**Neural network analysis of S2-star dynamics: extended mass**

V.G.Gurzadyan, N. Galikyan, Sh. Khlghatyan, A. A. Kocharyan

European Physical Journal Plus 2024 246

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**S2-star dynamics probing the galaxy core cluster**

Gurzadyan V.G., Kocharyan A.A., Khlghatyan Sh., Galikyan N.

European Physical Journal Plus 2024 821

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*Article*

**Smearing of primordial gravitational waves**

V.G.Gurzadyan, A.A.Kocharyan, M.Samsonyan

European Physical Journal Plus 2024 317

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*Article*

**On the high accuracy to test dragging of inertial frames with the LARES 2 space experiment**

Vahe Gurzadyan, Ciufolini Ignazio, Paris Claudio, Pavlis Erricos C., Ries John C., Matzner Richard,

Deka Darpanjeet, Ortore Emiliano, Kuzmicz-Cieslak Magdalena, Penrose Roger, Paolozzi Antonio,

Goncalves Juan Pablo Sellanes

European Physical Journal C 2024 998

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**The LARES 2 satellite, general relativity and fundamental physics**

Vahe Gurzadyan, Ignazio Ciufolini, Antonio Paolozzi, Erricos C. Pavlis, John C. Ries, Richard Matzner,

Claudio Paris, Emiliano Ortore, Roger Penrose

European Physical Journal C 2023 87

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*Article*

**Focus point on tensions in cosmology from early to late universe: the value of the Hubble constant and the question of dark energy**

V.G.Gurzadyan, S.Capozziello

European Physical Journal Plus 2023 184

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*Article*

**Cosmic voids and the kinetic analysis. II. Link to Hubble tension**

V.G.Gurzadyan, N.N.Fimin, V. M. Chechetkin

Astronomy and Astrophysics 2023 A95

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*Article*

**Cosmic voids and the kinetic analysis III. Hubble tension and structure formation in the late Universe**

V.G. Gurzadyan, N. N. Fimin, V. M. Chechetkin

Astronomy and Astrophysics 2023 A161

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*Article*

**Neural network analysis of S-star dynamics: implications for modified gravity**

V. G. Gurzadyan, A. A. Kocharyan, N. Galikyan, Sh. Khlghatyan

European Physical Journal Plus 2023 883

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*Article*

**First results of the LARES 2 space experiment to test the general theory of relativity**

Vahe Gurzadyan, Ignazio Ciufolini, Claudio Paris, Erricos C. Pavlis, John Ries, Richard Matzner, Antonio Paolozzi, Emiliano Ortore, Giuseppe Bianco, Magdalena Kuzmicz-Cieslak, Roger Penrose

European Physical Journal Plus 2023 1054

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**On the origin of cosmic web**

Gurzadyan V.G., Chechetkin, Fimin

European Physical Journal Plus 2022 132

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**The cosmological constant vs adiabatic invariance**

V. G. Gurzadyan, A. A. Kocharyan, A. Stepanian, Sh. Khlghatyan

European Physical Journal Plus 2022 458

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*Article*

**Tidal disruption effects near black holes and Lambda-gravity**

A.Stepanian, V.Gurzadyan, Sh.Khlghatyan

European Physical Journal Plus 2022 965

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*Article*

**Gravitational waves as waveguides**

V. G. Gurzadyan, M. Samsonyan, A. A. Kocharyan

European Physical Journal Plus 2022 1133

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*Article*

**Cosmic voids and the kinetic analysis**

V.G.Gurzadyan, V.M.Chechetkin, N.Fimin

Astronomy and Astrophysics 2022 A149

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*Article*

**Hubble tension and absolute constraints on the local Hubble parameter**

V.G.Gurzadyan, A.Stepanian

Astronomy and Astrophysics 2021 A145

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*Article*

**Cosmic voids and induced hyperbolicity. III. Tracing redshift dependence**

V.G.Gurzadyan, A.Kocharyan, M.Samsonyan, A.Stepanian

European Physical Journal Plus 2021 821

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**Cosmological constant, information and gedanken experiments with black hole horizons**

V.G.Gurzadyan, A.Stepanian

European Physical Journal Plus 2021 361

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**Cosmic voids and induced hyperbolicity. II. Sensitivity to void/wall scales**

V.G.Gurzadyan, M.Samsonyan, A.Kocharyan, A.Stepanian

European Physical Journal Plus 2021 350

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**Focus point on modified gravity theories and cosmology**

V.G.Gurzadyan, Capozziello

European Physical Journal Plus 2021 871

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*Article*

**Ultrahigh accuracy time synchronization technique operation on the Moon**

V.G.Gurzadyan, A.Margarian

European Physical Journal Plus 2021 329

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*Article*

**Hubble tension vs two flows**

V.G.Gurzadyan, A.Stepanian

European Physical Journal Plus 2021 235

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*Article*

**Black hole shadow to probe modified gravity**

V.G.Gurzadyan, A.Stepanian, Sh.Khghatyan

European Physical Journal Plus 2021 127

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**Cosmic voids and induced hyperbolicity**

V.G.Gurzadyan, M. Samsonyan, A. A. Kocharyan, A. Stepanian

European Physical Journal Plus 2020 946

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**Lense-Thirring precession and gravito-gyromagnetic ratio**

V.G.Gurzadyan, A. Stepanian, Sh. Khlghatyan

European Physical Journal C 2020 1011

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**On the Lambda-evolution of galaxy clusters**

V.G.Gurzadyan, A. A. Kocharyan, A. Stepanian

European Physical Journal C 2020 24

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**Focus Point on Tests of General Relativity and Alternative Gravity Theories**

V. Gurzadyan, I. Ciufolini, S. Capozziello

European Physical Journal Plus 2019 251

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**An improved test of the general relativistic effect of frame-dragging using the LARES and LAGEOS satellites**

V.G.Gurzadyan, Roger Penrose, Claudio Paris, Rolf Koenig, Richard Matzner, John Ries,

Giampiero Sindoni, Erricos C. Pavlis, Antonio Paolozzi, Ignazio Ciufolini  
European Physical Journal C 2019 872

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**Satellite Laser-Ranging as a Probe of Fundamental Physics**

Vahe Gurzadyan, Rolf Koenig, John Ries, Giampiero Sindoni, Erricos C. Pavlis, Antonio Paolozzi,  
Ignazio Ciufolini, Richard Matzner  
Scientific Reports 2019 15881

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**Machine learning and Kolmogorov analysis to reveal gravitational lenses**

V.G.Gurzadyan, S. S. Mirzoyan, H. Khachatryan, G. Yegorian  
Monthly Notices of the Royal Astronomical Society 2019 L32

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**H<sub>0</sub> tension: clue to common nature of dark sector?**

V.G.Gurzadyan, A. Stepanian  
European Physical Journal C 2019 568

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**The cosmological constant derived via galaxy groups and clusters**

V.G.Gurzadyan, A. Stepanian  
European Physical Journal C 2019 169

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*Article*

**Cosmological constant as a fundamental constant**

V.G.Gurzadyan, A. Stepanian  
European Physical Journal Plus 2019 98

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**On the common nature of dark matter and dark energy: Galaxy groups**

V.G.Gurzadyan  
European Physical Journal Plus 2019 14

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**Rotating baryonic dark halos**

V.G.Gurzadyan, Ph. Jetzer, G. Ingrosso, N. Tahir, S. Sargsyan, A. Amekhyan, A. Kashin, A. Qadir,  
A. A. Nucita, A. V. Gurzadyan, F. De Paolis  
Astronomy and Astrophysics 2019 A87

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**Messier 81's Planck view versus its halo mapping**

A. Amekhyan, V. G. Gurzadyan, S. Sargsyan, A. L. Kashin, F. De Paolis, A. A. Nucita, G. Yegorian,  
A. Qadir, G. Ingrosso, Ph. Jetzer, D. Vetrugno  
Astronomy and Astrophysics 2018 A131

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