

Fernando Esteban Izaurieta Aranda
Investigador
Universidad San Sebastián
Facultad de Ingeniería y Tecnología
Facultad de Ingeniería, Arquitectura y Diseño
Ingeniería Civil
Doctorado en Física Teórica
Vicerrectoría de Investigación y Doctorados
Sede Concepción
Email: Fernando.Izaurieta@uss.cl



Research interests

Dr. Izaurieta is dedicated to research and dissemination in theoretical physics and astrophysics. His research, published in numerous international scientific journals, focuses on Einstein's general theory of relativity, black holes, cosmology, gravitational waves, and supergravity in higher dimensions. He has been the principal investigator of three FONDECYT projects and a co-investigator in two of them, and has supervised numerous master's and doctoral theses.

Research outputs

No late-time role for adiabatic torsion: a no-go result for Hubble-cutoff holographic dark energy in Einstein–Cartan cosmology

Izaurieta, F., Lepe, S. & Quinzacara, C., 2026, In: European Physical Journal C. 86, 9, p. 1088 10 p., 1088.

Governing Vertical Urbanism: Property Rights, 3D Land Administration and the Sustainability of Inter-Building Connectivity

Mata, R., Izaurieta, F., Quinzacara, C., Correa, C., Bustamante, G., Nuñez, E. & Lobos-Calquin, D., 2026, In: Sustainability (Switzerland). 18, 15, p. 1-30 30 p., 7696.

(Quasi-)normal modes of rotating black holes and new solitons in Einstein-Gauss-Bonnet

Tapia, L., Aguayo, M., Anabalón, A., Astefanesei, D., Grandi, N., Izaurieta, F., Oliva, J. & Quinzacara, C., 2025, In: Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics. 862, 139347, 10 p., 139347.

Gravitational Faraday-Cartan effect beyond gravitomagnetism due to dark matter intrinsic spin

Izaurieta Aranda, F. E., Quinzacara Cortés, C. A., Meza Bordones, P. A., Lepe, S., Valdivia, O., Barriga, F. & Muñoz, J., 2025, In: Journal of Cosmology and Astroparticle Physics. 2025, 2, 23 p., 003.

Rotating and accelerating AdS black holes in Einstein-Gauss-Bonnet gravity

Anabalón, A., Astefanesei, D., Cisterna, A., Izaurieta, F., Oliva, J., Quijada, C. & Quinzacara, C., 2024, In: Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics. 857, 139000, 139000.

Four dimensional topological supergravities from transgression field theory

Concha, P., Izaurieta, F., Rodríguez, E. & Salgado, S., 2024, In: Journal of High Energy Physics. 2024, 5, 248.

Asymptotically AdS black hole with a conformally-coupled scalar field in the first-order formalism of gravity

Avilés, L., Corral, C., Izaurieta, F., Valdivia, O. & Vera, C., 2024, In: Physical Review D. 109, 8, 084039.

Gravitational waves in Einstein–Cartan theory: On the effects of dark matter spin tensor

Elizalde, E., Izaurieta, F., Riveros, C., Salgado, G. & Valdivia, O., 2023, In: Physics of the Dark Universe. 40, 101197.

Einstein-Chern-Simons equations on the 3-brane world

Izaurieta, F., Salgado, P. & Salgado, R., 2022, In: Nuclear Physics B. 980, 115832.

Wave operators, torsion, and Weitzenböck identities

Barrientos, J., Izaurieta, F., Rodríguez, E. & Valdivia, O., 2022, In: General Relativity and Gravitation. 54, 3, 26.

Comparing the structures of storytelling and magic for science communication with an agent-based model

Ilić-García, J., Izaurieta, F., Ormazábal, I. & Astudillo, H. F., 2022, In: Public Understanding of Science. 31, 1, p. 119-132 14 p.

The spin tensor of dark matter and the Hubble parameter tension

Izaurieta, F., Lepe, S. & Valdivia, O., 2020, In: Physics of the Dark Universe. 30, 100662.

Cosmological dark matter amplification through dark torsion

Izaurieta, F. & Lepe, S., 2020, In: Classical and Quantum Gravity. 37, 20, abb2d2.

Mimetic Einstein-Cartan-Sciama-Kibble (ECSK) gravity

Izaurieta, F., Medina, P., Merino, N., Salgado, P. & Valdivia, O., 2020, In: Journal of High Energy Physics. 2020, 10, 150.

Non-zero torsion and late cosmology

Cruz, M., Izaurieta, F. & Lepe, S., 2020, In: European Physical Journal C. 80, 6, 559.

Luminal propagation of gravitational waves in scalar-tensor theories: The case for torsion

Barrientos, J., Cordonier-Tello, F., Corral, C., Izaurieta, F., Medina, P., Rodríguez, E. & Valdivia, O., 2019, In: Physical Review D. 100, 12, 124039.

Linear and second-order geometry perturbations on spacetimes with torsion

Izaurieta, F., Rodríguez, E. & Valdivia, O., 2019, In: European Physical Journal C. 79, 4, 337.

Minimal AdS-Lorentz supergravity in three-dimensions

Fierro, O., Izaurieta, F., Salgado, P. & Valdivia, O., 2019, In: Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics. 788, p. 198-205 8 p.

Non-minimally coupled scalar field cosmology with torsion

Cid, A., Izaurieta, F., Leon, G., Medina, P. & Narbona, D., 2018, In: Journal of Cosmology and Astroparticle Physics. 2018, 4, 041.

Four dimensional topological supergravity from transgression field theory

Izaurieta, F. & Salgado, S., 2018, *14th Marcel Grossman Meeting On Recent Developments in Theoretical and Experimental General Relativity, Astrophysics and Relativistic Field Theories, Proceedings*. Bianchi, M., Jantzen, R. T., Ruffini, R. & Ruffini, R. (eds.). World Scientific Publishing Co. Pte. Ltd., p. 1373-1376 4 p. (14th Marcel Grossman Meeting On Recent Developments in Theoretical and Experimental General Relativity, Astrophysics and Relativistic Field Theories, Proceedings).

Nonminimal couplings, gravitational waves, and torsion in Horndeski's theory

Barrientos, J., Cordonier-Tello, F., Izaurieta, F., Medina, P., Narbona, D., Rodríguez, E. & Valdivia, O., 2017, In: Physical Review D. 96, 8, 084023.

Chern-Simons-Antoniadis-Savvidy forms and standard supergravity

Izaurieta, F., Salgado, P. & Salgado, S., 2017, In: Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics. 767, p. 360-365 6 p.

Randall-Sundrum brane Universe as a ground state for Chern-Simons gravity

Cordonier-Tello, F., Izaurieta, F., Mella, P. & Rodríguez, E., 2016, In: Classical and Quantum Gravity. 33, 23, 235004.

Topological gravity and Chern-Simons forms in $d=4$

Catalán, P., Izaurieta, F., Salgado, P. & Salgado, S., 2015, In: Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics. 751, p. 205-208 4 p.

A Chern-Simons gravity action in $d=4$

Izaurieta, F., Muñoz, I. & Salgado, P., 2015, In: Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics. 750, p. 39-44 6 p.

Gauged Wess-Zumino-Witten actions for generalized Poincaré algebras

Salgado, S., Izaurieta, F., González, N. & Rubio, G., 2014, In: Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics. 732, p. 255-262 8 p.

Effectively four-dimensional spacetimes emerging from $d = 5$ Einstein-Gauss-Bonnet gravity

Izaurieta, F. & Rodríguez, E., 2013, In: Classical and Quantum Gravity. 30, 15, 155009.

A generalized action for $(2 + 1)$ -dimensional Chern-Simons gravity

Díaz, J., Fierro, O., Izaurieta, F., Merino, N., Rodríguez, E., Salgado, P. & Valdivia, O., 2012, In: Journal of Physics A: Mathematical and Theoretical. 45, 25, 255207.

On eleven-dimensional supergravity and Chern-Simons theory

Izaurieta, F. & Rodríguez, E., 2012, In: Nuclear Physics B. 855, 2, p. 308-319 12 p.

Expanding lie and gauge free differential algebras through abelian semigroups

Izaurieta, F., Rodríguez, E., Pérez, A. & Salgado, P., 2012, *12th Marcel Grossmann Meeting on Recent Dev. in Theoretical and Experimental General Relativity, Astrophysics and Relativistic Field Theories - Proc. of the MG 2009 Meeting on General Relativity*. World Scientific Publishing Co. Pte. Ltd., p. 2228-2230 3 p. (12th Marcel Grossmann Meeting on Recent Dev. in Theoretical and Experimental General Relativity, Astrophysics and Relativistic Field Theories - Proc. of the MG 2009 Meeting on General Relativity).

Standard general relativity from Chern-Simons gravity

Izaurieta, F., Minning, P., Perez, A., Rodríguez, E. & Salgado, P., 2009, In: Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics. 678, 2, p. 213-217 5 p.

Dual formulation of the Lie algebra S -expansion procedure

Izaurieta, F., Perez, A., Rodríguez, E. & Salgado, P., 2009, In: Journal of Mathematical Physics. 50, 7, 073511.

Eleven-dimensional gauge theory for the M-algebra as an Abelian semigroup expansion of $osp(32|1)$

Izaurieta, F., Rodríguez, E. & Salgado, P., 2008, In: European Physical Journal C. 54, 4, p. 675-684 10 p.

Construction of Lie algebras and invariant tensors through abelian semigroups

Izaurieta, F., Rodríguez, E. & Salgado, P., 2008, In: Journal of Physics: Conference Series. 134, 012005.

M supergravity and abelian semigroups

Izaurieta, F., Rodríguez, E. & Salgado, P., 2008, In: Journal of Physics: Conference Series. 134, 012004.

The extended cartan homotopy formula and a subspace separation method for chern-simons theory

Izaurieta, F., Rodríguez, E. & Salgado, P., 2007, In: Letters in Mathematical Physics. 80, 2, p. 127-138 12 p.

An ads-invariant theory of gravity in any dimension

Salgado, P., Izaurieta, F. & Rodríguez, E., 2006, *The Tenth Marcel Grossmann Meeting: On Recent Developments in Theoretical and Experimental General Relativity, Gravitation and Relativistic Field Theories*. World Scientific Publishing Co., Vol. 2. p. 1424-1429 6 p.

Expanding Lie (super)algebras through Abelian semigroups

Izaurieta, F., Rodríguez, E. & Salgado, P., 2006, In: Journal of Mathematical Physics. 47, 12, 123512.

Euler-Chern-Simons gravity from Lovelock-Born-Infeld gravity

Izaurieta, F., Rodríguez, E. & Salgado, P., 2004, In: Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics. 586, 3-4, p. 397-403 7 p.

Supergravity in $(2 + 1)$ dimensions from $(3 + 1)$ -dimensional supergravity
Salgado, P., Rodríguez, E. & Izaurieta, F., 2004, In: European Physical Journal C. 35, 3, p. 429-435 7 p.

Higher-dimensional gravity invariant under the AdS group
Salgado, P., Izaurieta, F. & Rodríguez, E., 2003, In: Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics. 574, 3-4, p. 283-288 6 p.

Press/Media

Projects

FONDECYT R-1262414: Constraining Spacetime Torsion through Gravitational Waves: From Riemann-Cartan Geometry to Observational Signatures

Izaurieta Aranda, F. E. (Investigador(a) Responsable), Anabalón, A. (Col), Salgado, P. (Col), Valdivia, O. (Col) & Oliva, J. (Col)
01/04/26 → 31/03/30

FONDECYT R-1211219: Gravitational waves as an astrophysical probe for torsion

Izaurieta Aranda, F. E. (Investigador(a) Responsable)
01/04/23 → 31/03/25

“Comentarios Informe productividad

Comentarios Informe de productividad

Tengo siete publicaciones WoS Q1 y Q2 en los últimos tres años, superando así la productividad requerida:

Rotating and accelerating AdS black holes in Einstein-Gauss-Bonnet gravity
Anabalón, A., Astefanesei, D., Cisterna, A., Izaurieta, F., Oliva, J., Quijada, C. & Quinzacara, C., 2024, En: Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics. 857, 139000, 139000.

Validada / Público - Sin restricción

Four dimensional topological supergravities from transgression field theory
Concha, P., Izaurieta, F., Rodríguez, E. & Salgado, S., 2024, En: Journal of High Energy Physics. 2024, 5, 248.

Validada / Público - Sin restricción

Asymptotically AdS black hole with a conformally-coupled scalar field in the first-order formalism of gravity
Avilés, L., Corral, C., Izaurieta, F., Valdivia, O. & Vera, C., 2024, En: Physical Review D. 109, 8, 084039.

Validada / Público - Sin restricción

Gravitational waves in Einstein-Cartan theory: On the effects of dark matter spin tensor
Elizalde, E., Izaurieta, F., Riveros, C., Salgado, G. & Valdivia, O., 2023, En: Physics of the Dark Universe. 40, 101197.

Validada / Público - Sin restricción

Einstein-Chern-Simons equations on the 3-brane world
Izaurieta, F., Salgado, P. & Salgado, R., 2022, En: Nuclear Physics B. 980, 115832.

Aprobada / Público - Sin restricción

Wave operators, torsion, and Weitzenböck identities
Barrientos, J., Izaurieta, F., Rodríguez, E. & Valdivia, O., 2022, En: General Relativity and Gravitation. 54, 3, 26.

Aprobada / Público - Sin restricción

Comparing the structures of storytelling and magic for science communication with an agent-based model
Ilić-García, J., Izaurieta, F., Ormazábal, I. & Astudillo, H. F., 2022, En: Public Understanding of Science. 31, 1, p. 119-132 14 p.

Aprobada / Público - Sin restricción