August 17–18, 2026
Ege University, İzmir, Türkiye

On the stability of space forms

Gabriel-Eduard Vîlcu[1,2]

[1] *"Gheorghe Mihoc-Caius Iacob" Institute of Mathematical Statistics and Applied Mathematics of the Romanian Academy, Calea 13 Septembrie 13, Bucharest 050711, Romania*,
[2] *National University of Science and Technology Politehnica Bucharest, Department of Mathematics and Informatics, Splaiul Independenţei 313, Bucharest 060042, Romania*,
gabriel.vilcu@upb.ro

Abstract. In this talk, we discuss stability properties of geometric structures arising in almost contact metric geometry, with a particular emphasis on space forms. We begin by examining almost contact metric manifolds that are locally conformal to almost cosymplectic manifolds, where we derive stability results for the identity map under the assumption of pointwise constant ϕ-holomorphic sectional curvature.
Motivated by these findings, we then study the stability of generalized S-space forms. We establish a general stability criterion and identify conditions that lead to instability. Several consequences of these results are discussed, including applications to $f.pk$-space forms, S-space forms, C-space forms, and Sasakian space forms.
The presentation is primarily based on joint works with Cătălin Gherghe [1], J.-I. Inoguchi and C.-D. Neacşu [2].

Keywords: Harmonic map, Stability, Generalized S-space form, Sasakian space form.
Mathematics Subject Classification (2020): 53C55, 53C43, 58E20.

References

[1] C. Gherghe and G.-E. Vîlcu, *Harmonic maps on locally conformal almost cosymplectic manifolds*, *Communications in Contemporary Mathematics*, **26(09)** (2024), 2350052.

[2] J.-I. Inoguchi, C.-D. Neacşu and G.-E. Vîlcu, *Stability of generalized S-space forms*, (2026), submitted.