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**Scott Van Thuong\*** ([sthuong@pittstate.edu](mailto:sthuong@pittstate.edu)), 1701 S Broadway, Pittsburg, KS 66762. *All 4-dimensional infra-solvmanifolds are boundaries.*

Infra-solvmanifolds are a certain class of aspherical manifolds which generalize both flat manifolds and almost flat manifolds (i.e., infra-nilmanifolds). Every 4-dimensional infra-solvmanifold is diffeomorphic to a geometric 4-manifold with geometry of solvable Lie type.

There were questions about whether or not all 4-dimensional infra-solvmanifolds bound. We answer this affirmatively. On each infra-solvmanifold  $M$  admitting  $\text{Nil}^3 \times \mathbb{R}$ ,  $\text{Nil}^4$ ,  $\text{Sol}^3 \times \mathbb{R}$ , or  $\text{Sol}_1^4$  geometry, an isometric involution with 2-dimensional fixed set is constructed. The Stiefel-Whitney number  $\omega_1^4(M)$  vanishes by a result of R.E. Stong and from this it follows that all Stiefel-Whitney numbers vanish. (Received August 18, 2014)