

# NEW GAP RESULTS ON CLOSED 4-DIMENSIONAL RIEMANNIAN MANIFOLDS

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## Resumo/Abstract:

A result showed by M. Gursky in [1] ensures that any metric  $g$  on the 4-dimensional sphere  $S^4$  satisfying  $Ric_g = 3g$  and  $inj_g(S^4) \geq \frac{\pi}{\sqrt[4]{3}}$  is isometric to the round metric. In this talk, we will discuss on that there exists a universal number  $i_0$  such that any metric  $g$  on the 4-dimensional sphere  $S^4$  satisfying  $Ric_g = 3g$  and  $inj_g(S^4) \geq \frac{\pi}{\sqrt[4]{3}} - i_0$  is isometric to the round metric. Moreover, there exists a universal  $\varepsilon_0 > 0$  such that any metric  $g$  on the 4-dimensional sphere  $S^4$  with nonnegative sectional curvature,  $Ric_g = 3g$  and  $\frac{8}{9}\pi^2 - \varepsilon_0 \leq Vol_g(S^4)$  is isometric to the round metric. This last result slightly improves a rigidity theorem also proved in [1].

## References

- [1] M. GURSKY , *Four-manifolds with  $\delta W^+ = 0$  and Einstein constant of the sphere*, Math. Ann., 318 (2000), 417-431.