

## **Geometry of gradient Ricci solitons whose curvatures are not nonnegative.**

Chih-Wei Chen - Université Joseph Fourier, Grenoble (France) and National Taiwan University (Taiwan)

A short survey of gradient Ricci solitons will be given in the viewpoint of the positivity of their curvatures. Then we focus on solitons which might not possess nonnegative curvatures, especially the ones with fast-decaying curvatures. Under an assumption on the "density" of geodesic loops, we can derive the  $\kappa$ -noncollapsed property on such solitons.