

One of the most important solutions of Einstein equations is the Kerr metric. At the very centre of this space-time, there lies a ring curvature singularity. The singularity encircles a surface which joins together two asymptotically flat sheets of the manifold. The surface is intrinsically flat and is standardly interpreted as a planar disc. However, an article has been recently published which claims that the central surface is actually a dicone, with vertex (vertices) on the symmetry axis. In this thesis we analyse various geometric characteristics of the surface, in order to check which of the pictures is more adequate. We also examine the same surface of the Appell space-time which has the same spatial structure as the Kerr one.