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*Curvature estimates based on various classes of algebraic inequalities.*

In the last two decades, inspired by B.-Y. Chen's study of his  $\delta$ -invariants, there have been important advances in the study of new curvature invariants. First, by using an idea described by Cvetkovski, we obtain an estimate of the Gauss-Kronecker curvature of a three-dimensional smooth hypersurface in the four dimensional Euclidean space in function of its mean curvature and its scalar curvature. Then we discuss the geometric meaning of the amalgamatic curvature and we show how a new class of geometric objects is obtained: the absolutely umbilical hypersurfaces. (Received May 28, 2014)