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A view to cohomological dimension of an ideal

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The inequalities $ht(\mathfrak{a}) \leq cd(\mathfrak{a}, R) \leq ara(\mathfrak{a}) \leq l(\mathfrak{a})$ are known. It is an interesting and longstanding problems to find out the cases for the equality. The first part of the talk is to give the conditions in which some of the above inequalities turn to the equality. For this reason, an introduction to the so called formal local cohomology modules will be given. Using this we consider the cohomological dimension of an ideal with a view to the set theoretically (cohomologically) complete intersection ideals. Then in the second part we compare the cohomological dimension of linked ideals (The last part is a joint work with N. Shirmohammadi).