The 11th Seminar on
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School of Mathematics, IPM, Tehran

Ulrich Ideals and Modules

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My lectures are based on the works [GOTYW1, GOTYW2] jointly with K. Ozeki, K.-i. Yoshida, R. Takahashi, and K.-i. Watanabe. I will introduce the notion of Ulrich ideals, which are a special kind of $\mathfrak{m}$-primary ideals in given Cohen-Macaulay local rings $(A, \mathfrak{m})$. I associate Ulrich ideals to Ulrich modules (that is a generalization of *maximally generated maximal Cohen-Macaulay modules* in the sense of B. Ulrich [BHU]) and develop the theory, exploring the relation between them. The main purpose of my lectures is to provide an elementary (but fundamental) theory of Ulrich ideals and modules, including their ubiquity. We shall eventually show that the set $\mathcal{X}_A$ of Ulrich ideals in A is finite, if A has finite CM-representation type.

References

[BHU] J. P. Brennan; J. Herzog; B. Ulrich, Maximally generated maximal Cohen-Macaulay modules, *Math. Scand.*, **61** (1987), no. 2, 181–203.

[GOTYW1] S. Goto, K. Ozeki, R. Takahashi, K.-i. Yoshida, and K.-i. Watanabe, Ulrich ideals and modules, Math. Proc. Camb. Phil. Soc., 156 (2014), 137-166

[GOTYW2] S. Goto, K. Ozeki, R. Takahashi, K.-i. Yoshida, and K.-i. Watanabe, Ulrich ideals and modules over two-dimensional rational singularities, Nagoya Math. J. (to appear).