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Hans Schoutens* (hschoutens@citytech.cuny.edu), 365 Fifth Avenue, NY, NY 10016. *Higher canonical modules and balanced depth.*

Over a complete CM ring, Grothendieck duality enables us to study the local cohomology of a module. Moreover, the "dualizing" module is canonically defined, whence its eponymous name. Whereas duality fails over non CM rings, there is still a canonically defined module: the Matlis dual of the top local cohomology of the ring. However, the lower local cohomology does no longer vanish, so we should also study their Matlis duals. These are what I term the "i-th higher canonical modules".

Any CM ring is unmixed, which implies the following "balanced" behavior: any system of parameters is a regular sequence. However, this fails for non CM rings of depth $e < d$: the first e elements in a system of parameters do not necessarily form a regular sequence. If this stronger property nonetheless holds, then we will say that the ring (or module) has "balanced depth" e . I will show that balanced depth can be expressed in terms of the dimensions of the higher canonical modules. (Received January 29, 2014)