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**Olgur Celikbas\*** (celikbaso@missouri.edu), University of Missouri, Columbia, MO 65211, and  
**Greg Piepmeyer.** *Syzygies and tensor product of modules.*

If  $R$  is a local hypersurface (a commutative Noetherian ring that is a complete intersection of codimension one) and  $M$  and  $N$  are nonzero finitely generated  $R$ -modules such that either  $M$  or  $N$  has a rank, and  $M \otimes_R N$  is a second syzygy module, then a remarkable theorem of Huneke and Wiegand (referred as the second rigidity theorem) states that the pair  $(M, N)$  is Tor-independent, and this implies that both  $M$  and  $N$  are first syzygy modules.

In this talk I will discuss my joint work with Greg Piepmeyer that obtains a partial generalization of the second rigidity theorem over complete intersections of arbitrary codimension:

Let  $R$  be a local complete intersection of codimension  $c$  and let  $M$  and  $N$  be nonzero finitely generated  $R$ -modules. Assume  $M \otimes_R N$  is an  $(n + c)$ th syzygy module for some nonnegative integer  $n$ . Assume further that the pair  $(M, N)$  is Tor-independent. Then both  $M$  and  $N$  are  $n$ th syzygy modules.

I will also discuss some recent related results and open questions that come from our work. (Received September 16, 2013)