Let $R$ be a finite-dimensional regular local ring with maximal ideal $m$. The category of $m$-complete $R$-modules is not abelian, but it can be enlarged to an abelian category of so-called $L$-complete modules. This category is an abelian subcategory of the full category of $R$-modules, but it is not usually a Grothendieck category. It is well known that a Grothendieck category always has a derived category, however, this is much more delicate for arbitrary abelian categories.

In this talk, we will show that the derived category of the $L$-complete modules exists, and that it is in fact equivalent to a certain Bousfield localization of the full derived category of $R$. $L$-complete modules should be dual to $m$-torsion modules, which do form a Grothendieck category. We will make this precise by showing that although these two abelian categories are clearly not equivalent, they are derived equivalent. (Received September 15, 2014)