1135-13-1498 **Raymond C Heitmann*** (`heitmann@math.utexas.edu`) and **Linquan Ma**. *Extended Plus Closure in Complete Local Rings.*

The (full) extended plus closure was introduced by the first author in order to attack the homological conjectures in the hope that it would play the same role in mixed characteristic that tight closure does in characteristic p. Here, by adapting André's perfectoid algebra techniques, we show that this closure has the colon-capturing property for complete local domains. In fact, more generally, if R is a (possibly ramified) complete regular local ring of mixed characteristic, I and J are ideals of R, and the local domain S is a finite R-module, then $(IS : J) \subseteq (I : J)S^{epf}$. A consequence is that all ideals in regular local rings are closed, a fact which implies the validity of the direct summand conjecture and the Briançon-Skoda theorem in mixed characteristic. (Received September 22, 2017)