1112-16-310 **Iva Halacheva*** (iva.halacheva@utoronto.ca), Department of Mathematics, 40 St George St., Room 6920, Toronto, Ontario M5S 2E4, Canada. *Extensions of the Multivariable Alexander Polynomial.*

In her thesis (arXiv:0710.4885v1), J. Archibald defines an invariant of virtual tangles, valued in a tensor product of exterior algebras, which generalizes the Multivariable Alexander Polynomial (MVA) for links. This invariant can be computed through a straight-forward, albeit exponential-time algorithm from the corresponding Alexander matrix and provides an easy verification of almost all relations satisfied by the MVA and its weight system. On the other hand, D. Bar-Natan also defines a tangle invariant which generalizes the MVA. It is a reduction of an invariant of knotted copies of S^2 and S^1 in four-dimensional space, is matrix-valued and more-easily computable in polynomial time, but is only defined on pure tangles, i.e. no closed components. We will discuss how after some repackaging, Archibald's invariant coincides with that of Bar-Natan on pure tangles, and furthermore gives rise to a partial extension of Bar-Natan's invariant to tangles which can have closed components . (Received August 07, 2015)