1014-65-392 **Anton Leykin*** (leykin@math.uic.edu), **Jan Verschelde** and **Ailing Zhao**. *"Higher-order deflation of polynomial systems".* Preliminary report.

This is the continuation of our previous work on the (first-order) deflation of polynomial systems with isolated solutions. This method is symbolic-numeric: in a numerically stable way, we produce a sequence of deflations ending in a new polynomial system which has the original multiple solution as a regular root.

We introduce a generalization of the deflation method – the higher-order deflation, which makes it possible either to speed up the deflation sequence or, using a high enough order, reduce it to one step. This approach is helpful in battling the expression growth in the sequence of first-order deflations and has a potential to lead to a deflation technique for systems with higher-dimensional singular solution components. (Received September 14, 2005)