On The mdLVs Algorithm For Computing Matrix Singular Values

## Yoshimasa Nakamura

KYOTO UNIVERSITY, JAPAN ynaka@i.kyoto-u.ac.jp

The mdLVs algorithm(Iwasaki-Nakamura 2006) is designed by using a discrete time integrable dynamical system. The mdLVs is a new stable algorithm for computing bidiagonal matrix singular values with shift. A new shift strategy for the mdLVs is now invented which makes the original mdLVs faster and more accurate. An inplementation of the mdLVs is compared with LAPACK codes. On accuracy the mdLVs is the second after the bisection method. On speed the mdLVs is the second after the dqds algorithm. The mdLVs is a high-credible algorithm. Namely, it is exponentially stable and can converge to multiple singular values.

This is a joint work with Masashi Iwasaki (Kyoto Prefec. Univ.), Kinji Kimura (Niigata Univ.).