## Time-dependent DMRG study of orbital-degenerate Hubbard model

Hiroaki Onishi

Advanced Science Research Center, Japan Atomic Energy Agency, Tokai, Ibaraki 319-1195, JAPAN

We have studied the real-time evolution of wavepackets that carry a holon-doublon pair in a one-dimensional  $e_g$ -orbital Hubbard model at quarter lling, by exploiting a timedependent density-matrix renormalization group method [1]. Assuming that we have  $e_g$ orbitals on each site of a one-dimensional chain along the z direction, in the ground state, electrons are preferably accommodated in itinerant  $d_{3z^2-r^2}$  orbitals to gain kinetic energy. Creating a holon-doublon pair into the ground state, we observe that wavepackets of holon and doublon propagate with its own individual velocity. The different velocity of holon and doublon propagation is caused by a pair-hopping process in the local Coulomb interaction. We will discuss a crucial role of the pair-hopping interaction in the charge dynamics.

## References

[1] H. Onishi, J. Phys.: Conf. Ser. **200**, 012152 (2010).