Bose Hubbard model in the presence of Ohmic dissipation[1] DE-
NIS DALIDOVICH, MALCOLM KENNETT, Simon Fraser University — We study
the zero temperature mean-field phase diagram of the Bose-Hubbard model in the
presence of local interactions between the bosons and an external bath. We consider
a coupling that conserves the on-site occupation number, preserving the robustness
of the Mott and superfluid phases. We show that interaction with the bath shrinks
the size of the Mott lobes, leading to superfluidity around the points where μ/U is
integer, even in the absence of hopping between the sites. It also imposes an upper
limit on the possible occupation numbers in the Mott phase, $n_{\max}$ which is relatively
small. We discuss the role that such a bath coupling may play in experiments that
probe the formation of the insulator-superfluid shell structure in systems of trapped
atoms.

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Date submitted: 27 Nov 2007   Electronic form version 1.4