1023-42-1508 **Akram Aldroubi** and **Fumiko Futamura*** (fumiko.futamura@vanderbilt.edu), Vanderbilt University, Department of Mathematics, 1326 Stevenson Center, Nashville, TN 37240. *Localized Operators and the Construction of Localized Frames.* Preliminary report.

A frame for a Hilbert space is a kind of generalized orthonormal basis which is useful in signal processing. A localized frame is a frame whose elements are "well-localized", in the sense that the inner products of their elements decay as the differences of their indices increase. Grochenig in 2004 proved that localized frames for Hilbert spaces extend to frames for a family of associated Banach spaces. We generalize localized frames to the operator setting, and say an operator is localized with respect to given frames if there is an off-diagonal decay of the matrix representation of an operator with respect to the frames. We prove that operators localized with respect to localized frames are bounded on the same family of Banach spaces, and that they can be used in the construction of new localized frames. We also consider the special case where the frames are unitary shifts of a single atom function. (Received September 26, 2006)