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Abstract:This paper describes the combined Dutch efforts toward the development of large wideband focal plane array receivers based on kinetic inductance detectors (KIDs). Taking into account strict electromagnetic and detector sensitivity requirements for future ground and space based observatories, this work has led to the identification of well-suited coupling strategies based on the use of lens antenna and the demonstration of their feasibility. Moreover, some specific antenna design difficulties that characterize KIDs-based designs have been investigated, and innovative feeds for the focal plane array which could allow the receivers to be sensitive over a decade of Bandwidth have been proposed. © 2011 IEEE.