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**John J. Benedetto\*** (jjb@umd.edu) and **Michael R. Dellomo**. *Reactive sensing and multiplicative frame super-resolution.*

The problem is to evaluate the behavior of an object when primary sources of information about the object become unavailable, so that any information must be obtained from the intelligent use of available secondary sources. This evaluative process is reactive sensing. Reactive sensing is initially viewed in terms of spatial super-resolution. The theory of reactive sensing is based on two equivalent ideas, one physical and one mathematical. The physical idea models volume, e.g., engine volume in the case of analyzing engine health, and the sensitivity of sensors to such volume. The mathematical idea of multiplicative frames provides the factorization theory to compare quantitatively such volume and sensitivity. This equivalence is the foundation for reactive sensing theory and its implementation. Simulations for airplane mechanical vibration problems are given. (Received August 30, 2020)