1046-94-2067 **Olga V. Holtz*** (`holtz@math.berkeley.edu`), University of California, Department of Mathematics, 951 Evans Hall #3840, Berkeley, CA 94720. *Compressive sensing: a paradigm shift in signal processing.*

We survey a new paradigm in signal processing known as "compressive sensing". Contrary to old practices of data acquisition and reconstruction based on the Shannon-Nyquist sampling principle, the new theory shows that it is possible to reconstruct images or signals of scientific interest accurately and even exactly from a number of samples which is far smaller than the desired resolution of the image/signal, e.g., the number of pixels in the image. This new technique draws from results in several fields of mathematics, including algebra, optimization, probability theory, and harmonic analysis. We will discuss some of the key mathematical ideas behind compressive sensing, as well as its implications to other fields: numerical analysis, information theory, theoretical computer science, and engineering. (Received September 17, 2008)