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Sandrine Anthoine and **Ingrid Daubechies*** (ingrid@math.princeton.edu), 218 Fine Hall, Princeton University, Washington Road, Princeton, NJ 08544. *Two applications of frames for the analysis of astrophysical data.*

Several infrared telescopes under construction or in the planning stages will be able to measure astrophysical data at different wavelengths. If these observations permit the separation of the signal into Cosmic Background Radiation, Galaxies (both direct light and light from galactic dust) and Stars, then different cosmological theories can be tested by means of parameters measured in the galaxy component. The problem is to provide an effective decomposition of the observations into these different components. To find such decompositions, two different approaches, one via statistical estimation, one via a variational functional, were tested, both involving wavelet frames. The talk will describe the problem, the two approaches and their challenges, and illustrate with some results. This problem was suggested to us by astrophysicist Dr. Elena Pierpaoli, who also provided the data. (Received September 28, 2005)