## **COBE / FIRAS** (Far InfraRed Absolute Spectrophotometer)



 $T_0 = 2.725 \pm 0.001 \,\mathrm{K}$  $|y| \le 1.5 \times 10^{-5}$  $|\mu| \le 9 \times 10^{-5}$ 

Mather et al., 1994, ApJ, 420, 439 Fixsen et al., 1996, ApJ, 473, 576 Fixsen et al., 2003, ApJ, 594, 67



## Uniqueness of CMB Spectral Distortion Science



Guaranteed distortion signals in ΛCDM

New tests of inflation and particle/dark matter physics

Signals from the reionization and recombination eras

Huge discovery potential

Complementarity and synergy with CMB anisotropy studies

Zeldovich & Sunyaev, 1969 Sunyaev & Zeldovich, 1970 Danese & de Zotti, 1982 Burigana, Danese & de Zotti, 1991 Hu & Silk, 1993





COSMO TMS BISOU Voyage 2050

## History of distortion experiments and proposals



COBE/FIRAS Mather & Fixsen

1989



Nevertheless, the cross-polarization introduced by the optical system remains very low degraded with respect to the optimal configuration, according to GRASP results. In the sa