

We present the results of theoretical and experimental studies of the reflectivity of metals at cryogenic temperatures in the millimeter wavelength range. High-Q Fabry-Perot resonators operated at a temperature of 4-300 K in the frequency range 150-250 GHz are used for the experimental study. Silver, copper, gold, aluminum, and beryllium reflectors with different structures are examined. It has been shown that the reflection loss at cryogenic temperatures varies considerably (several times) depending on the structure of the sample surface and the presence of impurities. The obtained data make it possible to calculate the thermal noise of cooled reflectors of the antenna systems in millimeter and submillimeter telescopes.