ABSTRACT

An object of the invention is to provide a detection apparatus, an optical path length measuring apparatus, a method for evaluating an optical member, and the like, which can evaluate optical characteristics such as chromatic dispersion and an optical path length at a high speed. Another object is to provide a detection apparatus and a method for detecting a change in temperature, which can evaluate chemical and biological reactions and an effect of hyperthermia with high accuracy. In a detection apparatus 10A, zero-order light B0 undergoing chromatic dispersion of a measurement object S is superimposed on first-order light B1 shifted in frequency, whereby a low-frequency beat is produced, and wavelength dependence of a beat phase thereof is measured. Moreover, using an AC electric signal from a frequency shifter 12 as a phase reference signal, a relative position of a probe signal is detected. In addition, it is effective to shift the frequencies of probe light and reference light having mutually different wavelengths and determine a beat phase of probe light in a relative manner on the basis of a beat phase of reference light.