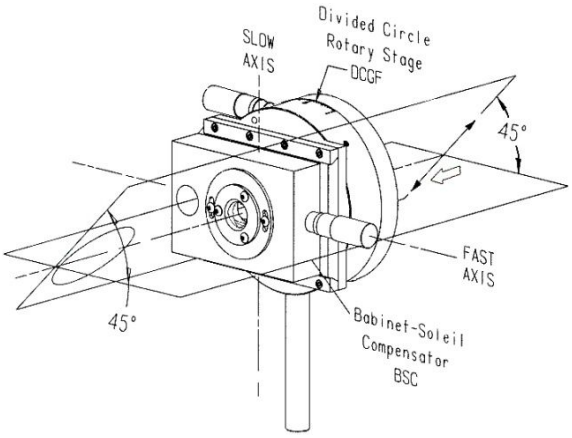
Babinet Soleil Compensator

Variable Retarders

General Specifications

Surface flatness : less than quarter wave @ 633nm
Surface quality : 40-20 scratch-dig
Reflectivity per surface : Uncoated about 4%
V coated less than 0.25%
BB coated about 1.5%
HEAR coated about 0.7%



Babinet Soleil Compensator is a variable waveplate. For example, it converts circularly or elliptically polarized light into linearly polarized light or vice versa. In crystal quartz, it is available in three standard models with retardation range at 633 nm of 0 to 1 wave, 0 to 3 waves and 0 to 6 waves. These are available with or without anti-reflection coating in cemented, optically contacted and air-spaced versions. In single crystal magnesium fluoride, the Babinet Soleil Compensator is available in one standard model with retardation range at 633 nm of 0 to 4 waves. It is available without anti-reflection coating and in air-spaced version only.

The compensator consists of two wedges of the same wedge angle and a parallel plate. The optic axes of the two wedges has the same orientation. These form a variable thickness plate . One of the wedges is assembled to the fixed parallel plate. The optic axis of the parallel plate is at 90 degrees to that of the wedges. The other wedge is attached to a micrometer and moves to produce a thickness difference between the fixed and variable thickness plates, thus producing a variable phase delay. The range of micrometer screw is 10 mm and it's least count is .01 mm. Over the 10 mm micrometer range, the three standard crystal quartz models have retardation of 1, 3 or 6 waves at 633 nm (i.e. retardation of 633 nm, 1899 nm and 3798 nm respectively) and the standard magnesium fluoride model has retardation of 4 waves at 633 nm (i.e. 2532 nm).

An optional rotatable mount (KLC Model DCGF) is available which allows easy and accurate adjustment of the compensator azimuth to within an accuracy of less than one arc minute. A dovetail slide permits the compensator to be easily removed from the light beam path

A Babinet Soleil Compensator (BSC) is placed between two crossed polarizers (axes perpendicular to each other) in such a way that the linear input polarization from the first polarizer is at 45 degrees to the fast axis of the compensator. Viewing through the second polarizer in a white light source, a black cross (Null) is observed at zero reading of the micrometer. This is zero retardation reading of the BSC. An unknown retardation to be measured is introduced between BSC and the polarizer. The BSC micrometer is turned until the black cross (Null) is observed again. The micrometer reading is an indirect measure of unknown retardation. A calibration chart is provided with each BSC which gives retardation in waves at a specific wavelength vs the micrometer reading

Model specifications

Part Number	*Clear Aperture Dia. (mm)*	*Retardation Range in wave at 633nm*	*Type*	*Substrate*	*Usefull wavelength range (mm)*
BSA-13-1	13	1	Air-spaced	Crystal quartz	200 to 2500
BSA-13-3	13	3	Air-spaced	Crystal quartz	200 to 2500
BSA-13-6	13	6	Air-spaced	Crystal quartz	200 to 2500
BSC-13-1	13	1	Cemented	Crystal quartz	230 to 2500
BSC-13-3	13	3	Cemented	Crystal quartz	230 to 2500
BSC-13-6	13	6	Cemented	Crystal quartz	230 to 2500
BSO-13-1	13	1	Optically contacted	Crystal quartz	200 to 2500
BSO-13-3	13	3	Optically contacted	Crystal quartz	200 to 2500
BSO-13-6	13	6	Optically contacted	Crystal quartz	200 to 2500
BSMT-13-2	13	4	Air-spaced	Magnesium fluoride	150 to 6000