

Re: Altering Laser Polarization with Wave Plates?

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On Mon, 24 Sep 2007 01:33:08 -0400, Tom Hubin <thubin@xxxxxxxxxxxxxxx> wrote:

Hello,

Suppose I have a polarized laser, where I don't know in advance what that polarization is. Might be linear in any orientation or might be elliptical in any orientation or might be circular.

Further, this laser is reflected by several mirrors, incident at 45 degrees onto various coated glasses, as it progresses through the system. These mirrors alter the polarization but I have no way to predict in what way.

So, in general, what exits is some arbitrary elliptical polarization.

And finally, I want the output beam to be circularly polarized. So far, I don't care if it is right handed or left handed circular.

Can this be done with two quarter wave plates? The first to convert elliptical output to linear and the second to convert linear to circular?

Is there a more practical solution? (i.e more compact or less expensive or easier to adjust or more popular)

Assuming that two quarter wave plates can be used at the output, can a similar pair be placed anywhere in the system and independently rotated so that the output is circularly polarized?

I agree with the answer of Phil. But such wave plates are rather expensive components, and they are very monochromatic and might be ordered specifically if the wavelength involved is rare.

I don't know what laser that is, but putting some demands on the laser output concerning a specific kind of polarization and the ability to

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rotate the laser might be cheapest.

You say that you reflect in 45 degrees with several multilayers without control of input polarization. That is not 'comme il faut'. Normally one interacts with either s- or p-polarization such that reflections are predictable.

And then afterwards you could convert a linear to circular polarization with a final quarter waveplate.

best regards

John

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