

# Hints and cautions

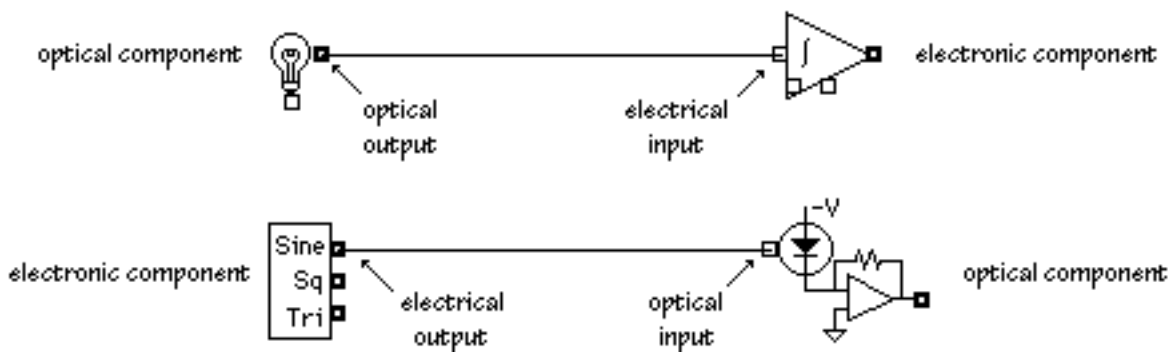
A great deal of trouble may be avoided by paying attention to the following advice:

1. If your *Extend* version is prior to **6**, it cannot use *LightStone*<sup>TM</sup> libraries. Upgrade your *Extend* program by contacting *Imagine That, Inc.* at [www.extendsim.com](http://www.extendsim.com).
2. Always remember to **print-out the dialog boxes of a model when you have the model working properly.** This makes it easy to replace upgraded blocks and is standard good practice.
3. **DO NOT UNDERSAMPLE** in an attempt to speed up a simulation!
4. All polychromatic models require a **Global parameters** block. Otherwise, they cannot run.
5. All models, containing one or more *optical calculus blocks* from **Monochrome.LIX**, are prevented from running if the **Global parameters** block is present in the model.

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## Bad models and mistakes

1.

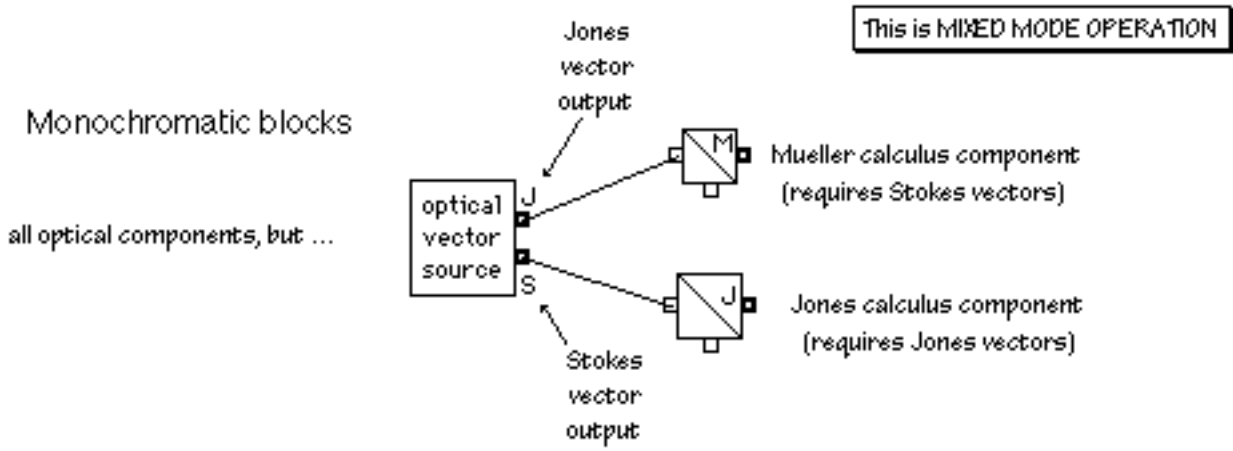


The upper model is bad because it shows an *optical* output connected to an *electrical* input. The optical output is either a vector (for the **Lamp** block in **Monochrome.LIX**) or a stack of vectors (for the **Lamp** block in **Polychrome.LIX**). Either way, the electrical input cannot do anything meaningful with optical vector input, so the result is nonsense.

The lower model is bad because it shows an *electrical* output connected to an *optical* input. The optical input should be either a vector (for the **PD/preamplifier** block in **Monochrome.LIX**) or a stack of vectors (for the **PD/preamplifier** block in **Polychrome.LIX**). Either way, the optical input cannot do anything meaningful with real number (electrical) input, so the result is nonsense.

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2.

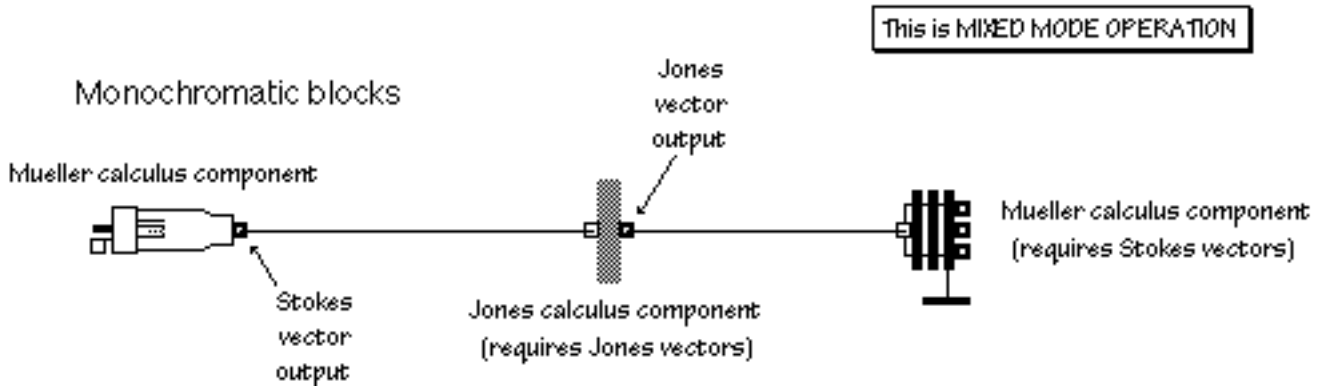


This model shows two mistakes: 1) using a Mueller calculus block input connected to a Jones vector output and 2) using a Jones calculus block input connected to a Stokes vector output. Both yield nonsense because both are mixed mode operation examples. Fortunately, this example is rather specific and easily avoided. The one on the next card is more annoying.

Note that this example applies to the purely monochromatic optical blocks in **Monochrome.LIX**. In the polychromatic optical blocks in *LightStone*, in **Polychrome.LIX**, this error is not possible.

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3.

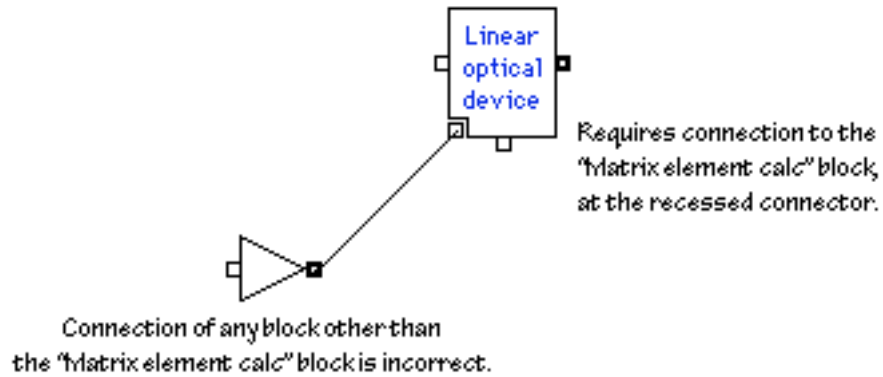


This model is also an example of mixed mode operation. Unlike the previous example, which is rather specific and easily avoided, this example is a bit more insidious. It most commonly occurs when a working Mueller calculus model is augmented by the addition of one or more blocks. **If the user forgets that newly created blocks default to Jones calculus, and must be individually specified, one by one, as being Mueller calculus, the result is mixed mode operation.**

Note that this example applies to the purely monochromatic optical blocks in **Monochrome.LIX**. In the polychromatic optical blocks in *LightStone*, in **Polychrome.LIX**, this error is not possible.

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4.



This example shows the connection of the **Linear optical device** and a block other than its corresponding **Matrix element calc** block. The **Linear optical device** block absolutely requires optical matrix information, received at its recessed input at its lower left corner. Connection to anything other than its corresponding **Matrix element calc** block will result in nonsense. Similarly, the **Matrix element calc** block has only one connector, a recessed output, which must be attached to the recessed input on its corresponding **Linear optical device** block. These two blocks work as a pair.

Note that the **Linear optical device** block and the **Matrix element calc** block have both monochromatic and polychromatic versions. **The two monochromatic versions must be paired and the two polychromatic versions must be paired.** Mixed mode operation is not allowed.