

## **Process Description:**

“**Anisotropic Gaussian detection**” identifies objects in the images by fitting them with two-dimensional anisotropic Gaussians and returns their sub-pixel positions and amplitudes. The positions, amplitudes and orientations of the local maxima in each image are first detected using a steerable detector. Each detection candidate is then fitted with an anisotropic 2D Gaussian model and the result of this fit is evaluated against various hypothesis tests (goodness-of-fit, amplitude...)

## **Parameter Descriptions:**

### **Input channels:**

This allows you to select which channels you want to detect objects in. Select the channels by clicking on them in the "Available Input Channels" box and then clicking "Select>" to move them to the "Selected Channels" box. You can unselect a channel by clicking the "Delete" button.

### **Standard Deviation of the Gaussian point-spread function:**

This value is used for the initial steerable filter applied to the image. This field is automatically filled if the corresponding movie information is supplied (pixel size, numerical aperture, emission wavelength).

### **Alpha-value for statistical tests:**

This value is used in several hypothesis tests:

- to decide the goodness of the anisotropic Gaussian fit
- to decide whether the amplitude of a fitted anisotropic 2D Gaussian is significantly higher than the background,

### **Size of the anisotropic Gaussian support in number of standard deviations:**

For each detection candidate, a finite support for the anisotropic Gaussian 2D model is computed using the position and orientation of the local maximum. This value determines the cutoff of this support expressed in number of standard deviations of the model.

### **Minimum distance between detected features:**

This value determines the minimum distance between the positions of adjacent features after fitting. Detection features localized at the same position, i.e. which distance is smaller than this value are removed from the detection output.