Bend Profile Radius Calculation
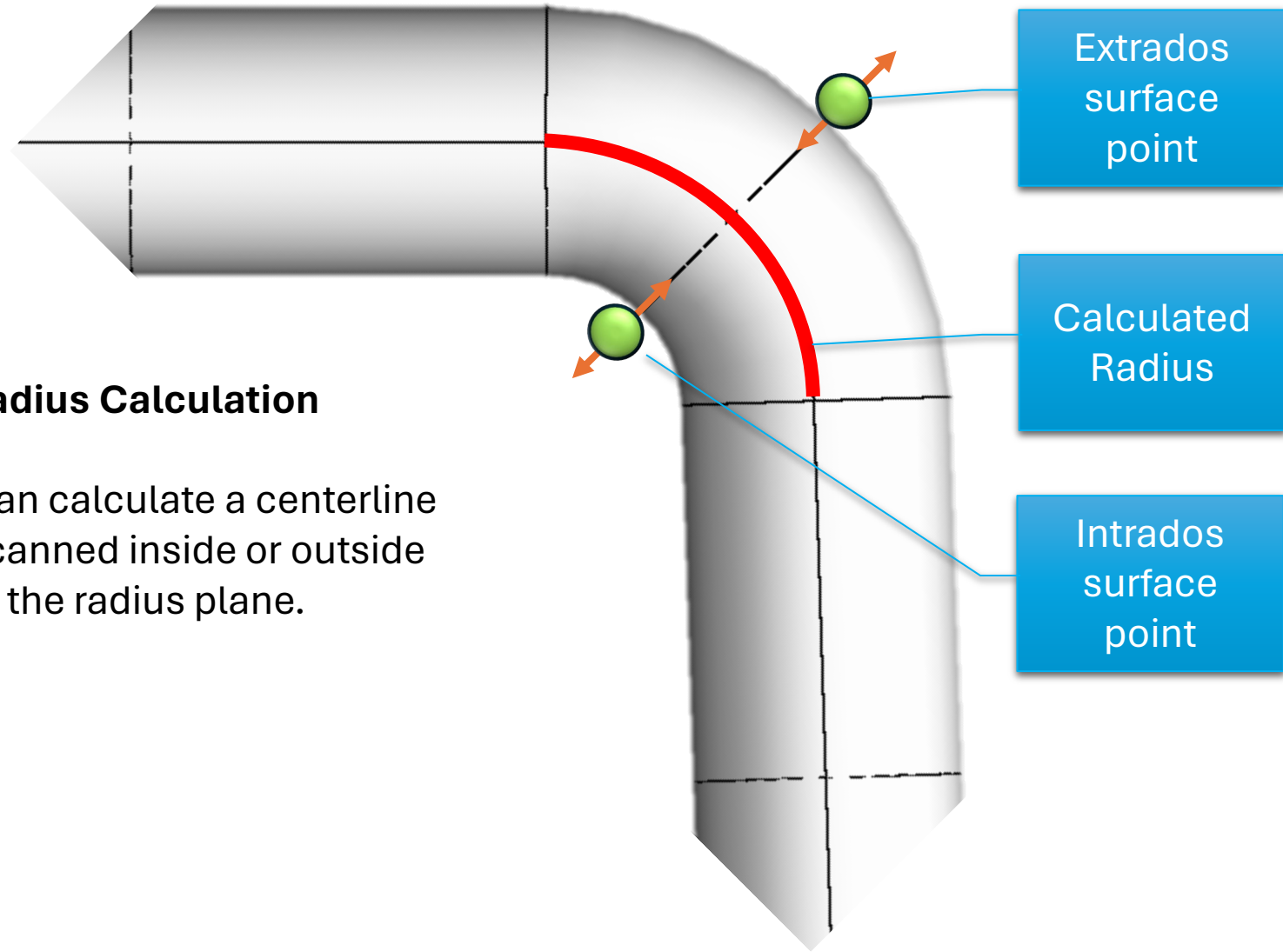
VTube-LASER can calculate a centerline radius from a scanned inside or outside surface point in the radius plane.

Extrados surface point

Calculated Radius

Intrados surface point

90-Degree Bend

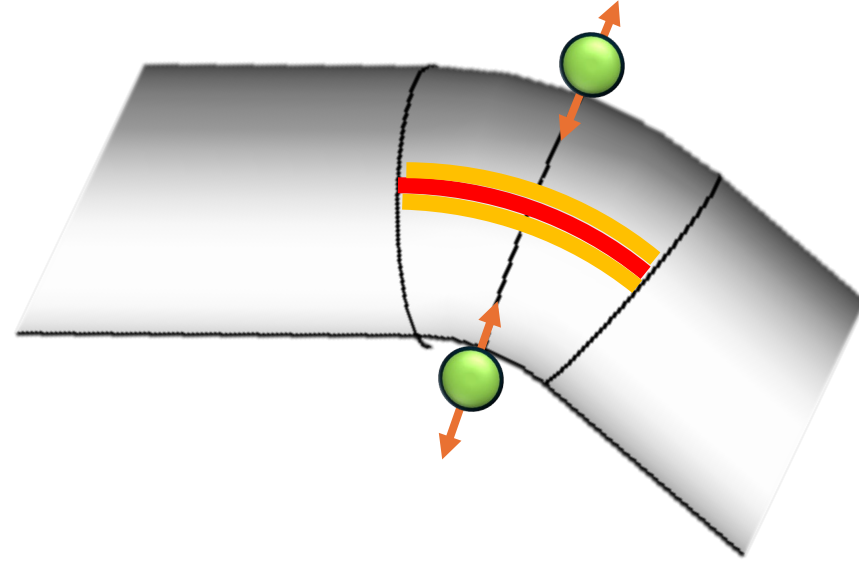**Extrados surface point**

Intrados surface point

Radius Calculation Accuracy Principle

For this near 90-degree bend, a surface point variance along the radius vector will result in a calculated radius variance **up to 3 times** the surface point variance.

At 50-micron accuracy, expect a radius variance of up to 0.150 millimeters (or 0.006 inches).
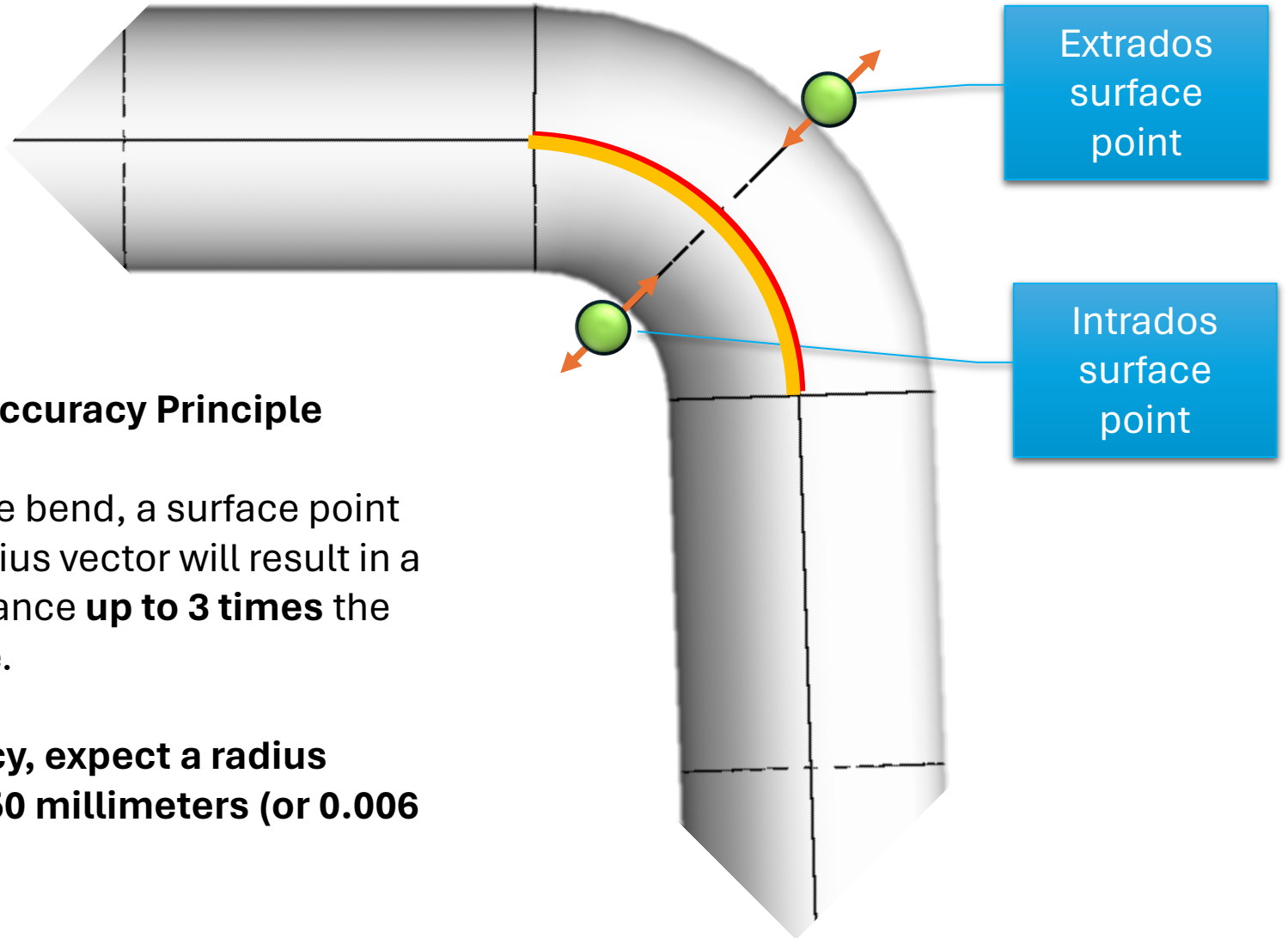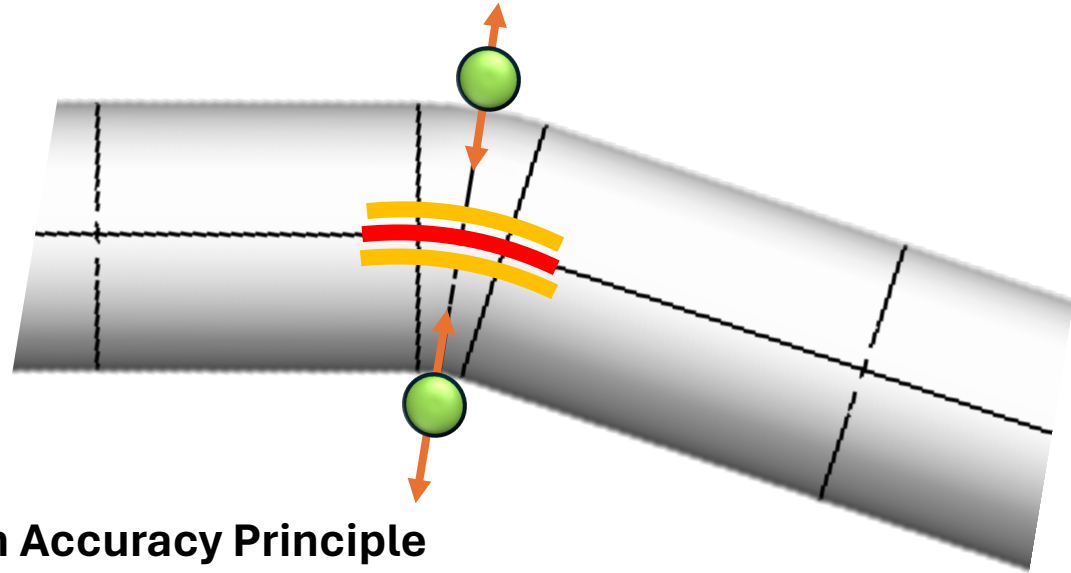
45-Degree Bend

Radius Calculation Accuracy Principle

For a 45-degree bend, a surface point variance along the radius vector will result in a calculated radius variance **up to 16 times** the surface point variance.

At 50-micron accuracy, expect a radius variance of up to 0.8 millimeters (or 0.031 inches).
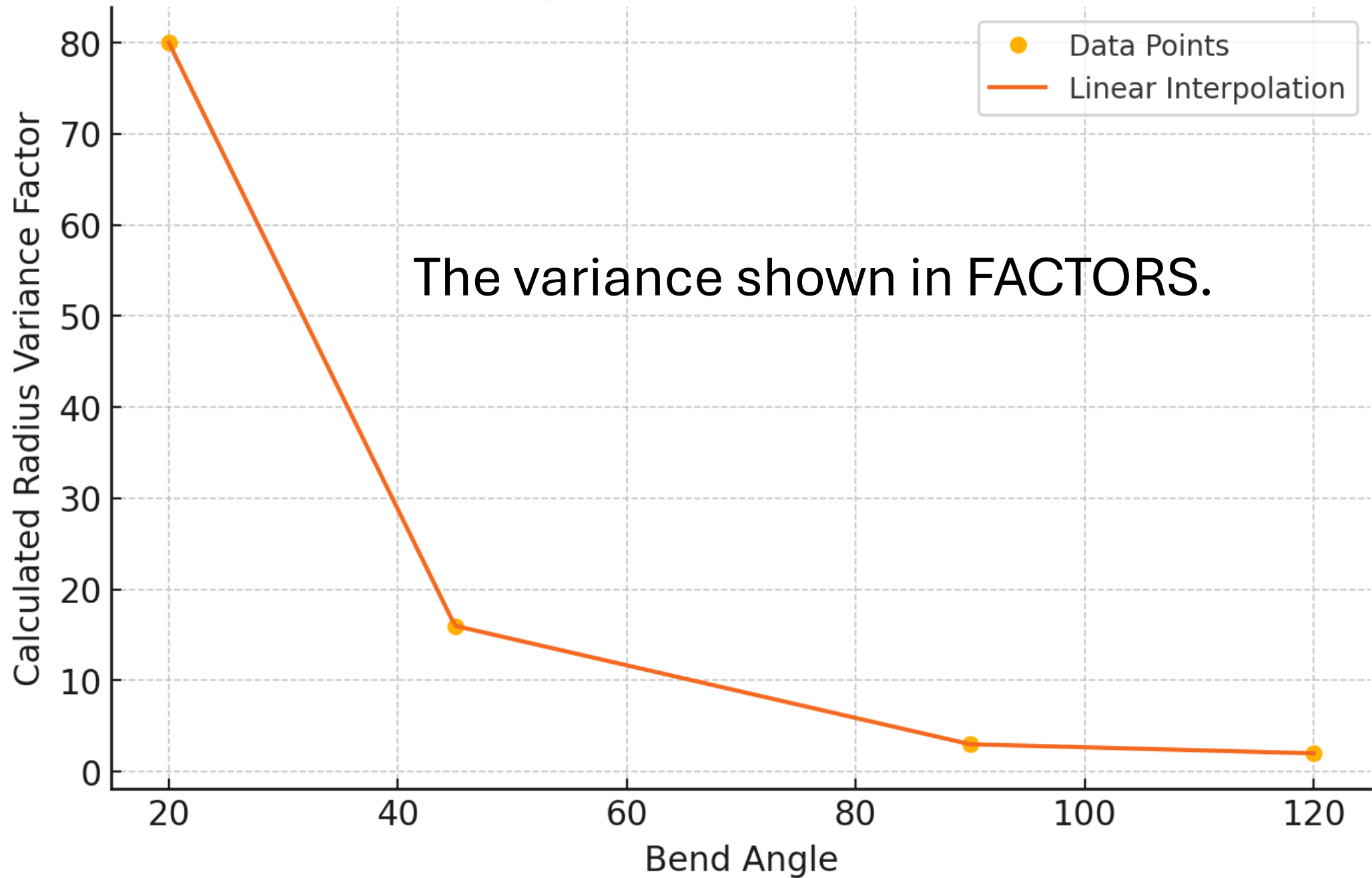
20-Degree Bend

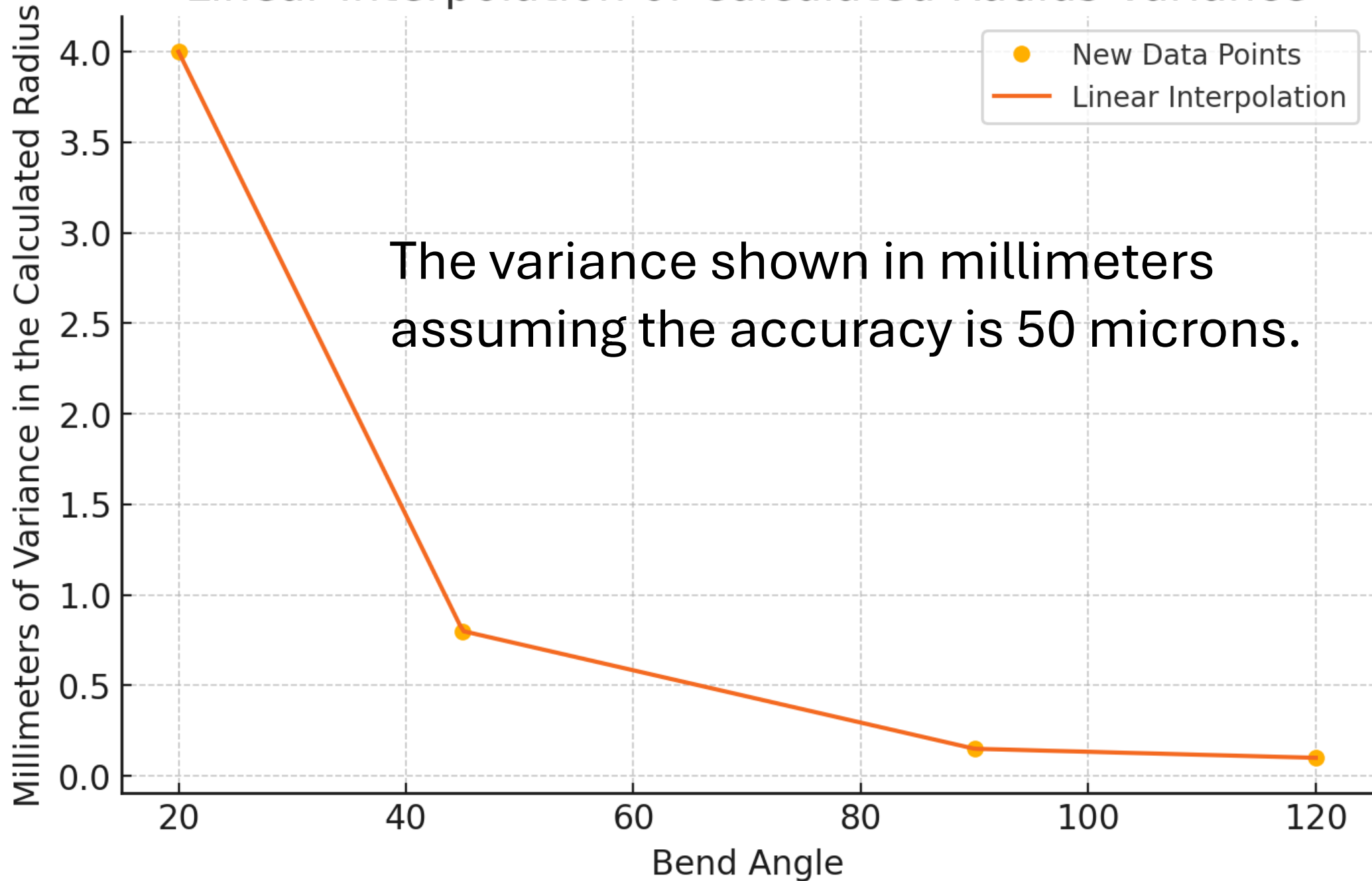**Radius Calculation Accuracy Principle**

For this 20-degree bend, a surface point variance along the radius vector will result in a calculated radius variance **up to 80 times** the surface point variance.

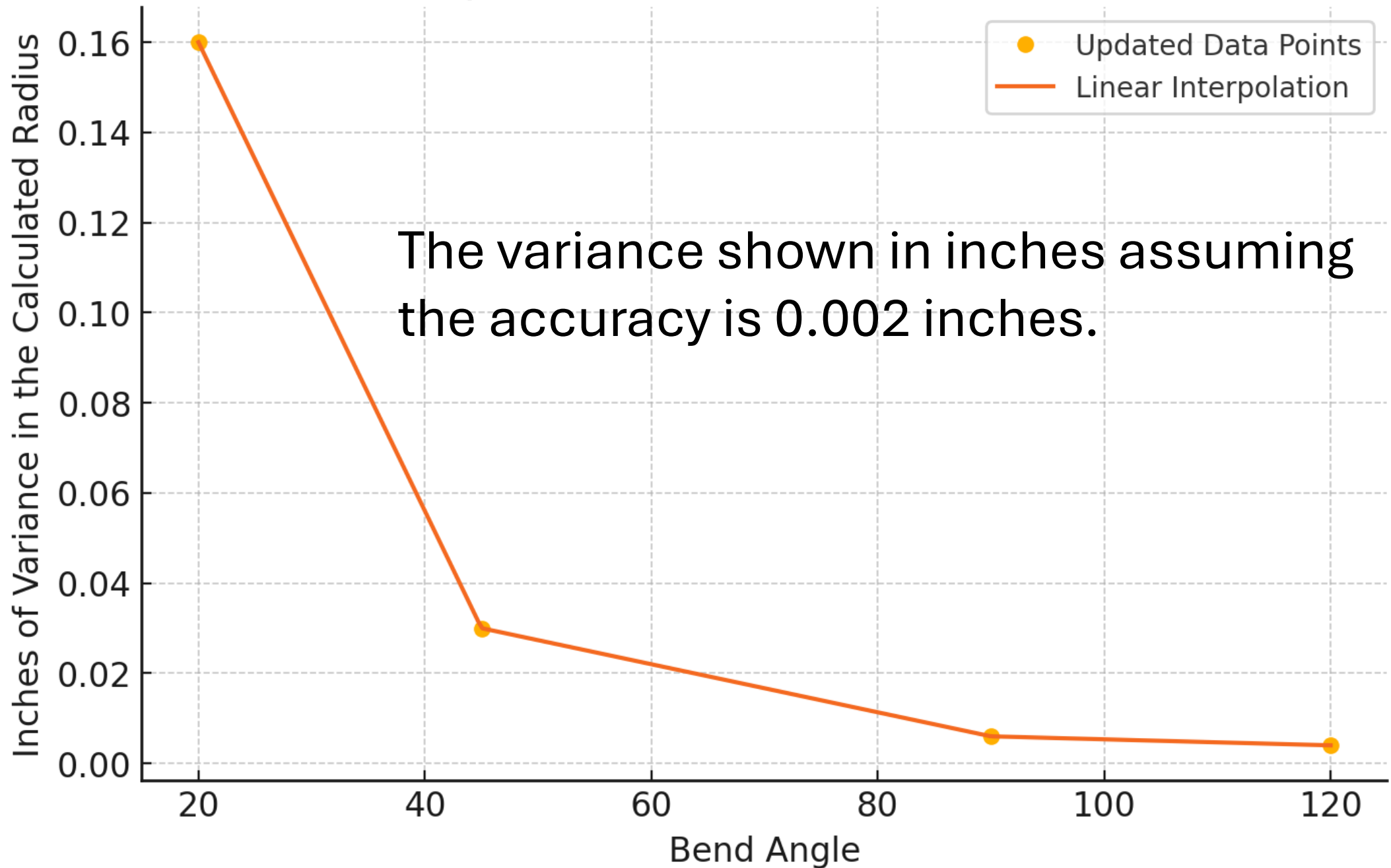**At 50-micron accuracy, expect a radius variance of up to 4 millimeters (or 0.16 inches).**
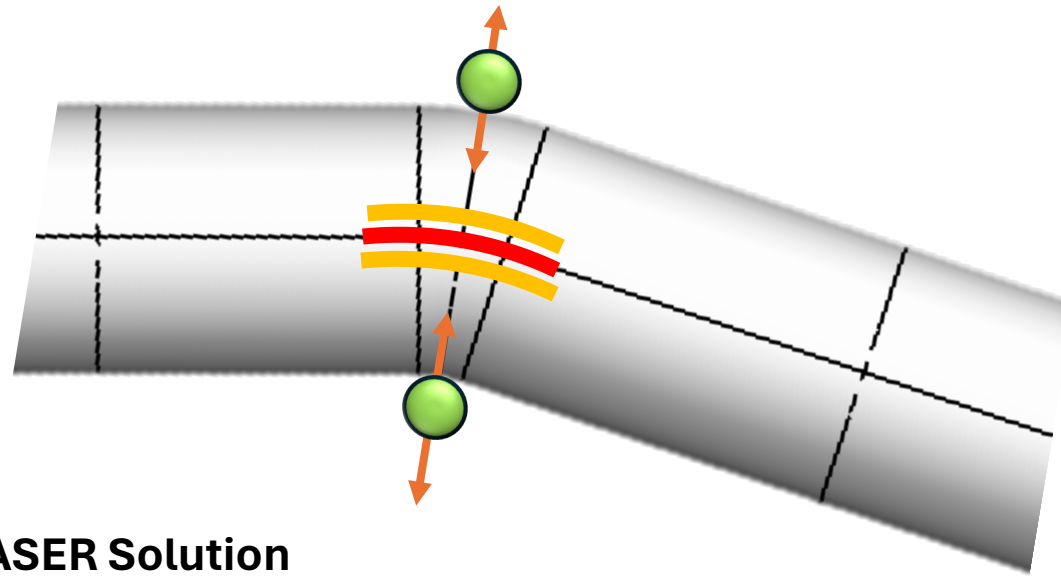
Linear Interpolation of Given Data Points

Linear Interpolation of Calculated Radius Variance

The variance shown in millimeters assuming the accuracy is 50 microns.

Linear Interpolation of Calculated Radius Variance

The variance shown in inches assuming the accuracy is 0.002 inches.

The VTube-LASER Solution

- When measuring radii, take more stripes to reduce variance. (The default is up to 300 stripes.)

- However, remember that higher variations in the final calculation will occur even at high accuracies – *especially in shallow bends*.

- Run multiple radius calculations for shallow bends and then average them.