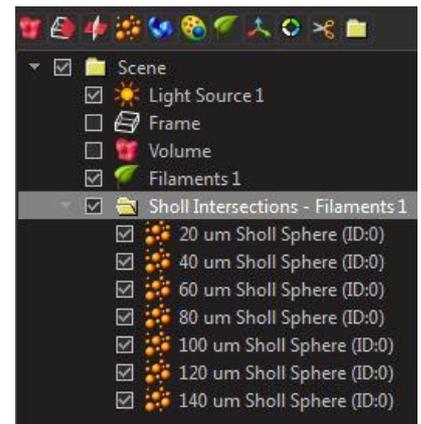


Filament Sholl Analysis XTension

Description: This XTension finds the Sholl intersections for a user-defined number of intervals. It will generate a new Spots group for each interval and place a spot object on the filament segment, exactly where the segment crosses the Sholl interval. Sholl intersections are detected in both 2D (circle) or 3D (sphere) datasets. This will also work for multiple filament objects as each Sholl intersection will have Filament ID index.

NOTE: Actual Sholl spheres are not visible in this XTension, only the intersections.



How it works: The script detects the Filament Starting point. From that point, a distances to points along the filament segments are calculated. The next step goes segment by segment, and find where the segments cross the Sholl sphere intervals. A Spot will be placed on the filament to mark each Sholl intersection.

How it compares to Sholl analysis in ImarisFilament: The results between the 2 methods are very similar, and match exactly for many intervals. The reason for any minor disparities is due to identification of Sholl intersections near dendrite branch points. The rules in the XTension are not identical to those in Imaris itself. A sample of a fairly complicated filament analysed by both methods

ImarisFilament

Value	Unit	Category	Radius
0.00		Filament	0.000
11.0		Filament	20.000
41.0		Filament	40.000
26.0		Filament	60.000
33.0		Filament	80.000
39.0		Filament	100.000
27.0		Filament	120.000
19.0		Filament	140.000
0.00		Filament	160.000

XTension Result

Variable	Value	Unit	Surpass Object
Total Number of Spots	12.0		20 um Sholl Sphere (ID:0)
Total Number of Spots	41.0		40 um Sholl Sphere (ID:0)
Total Number of Spots	27.0		60 um Sholl Sphere (ID:0)
Total Number of Spots	33.0		80 um Sholl Sphere (ID:0)
Total Number of Spots	38.0		100 um Sholl Sphere (ID:0)
Total Number of Spots	27.0		120 um Sholl Sphere (ID:0)
Total Number of Spots	19.0		140 um Sholl Sphere (ID:0)