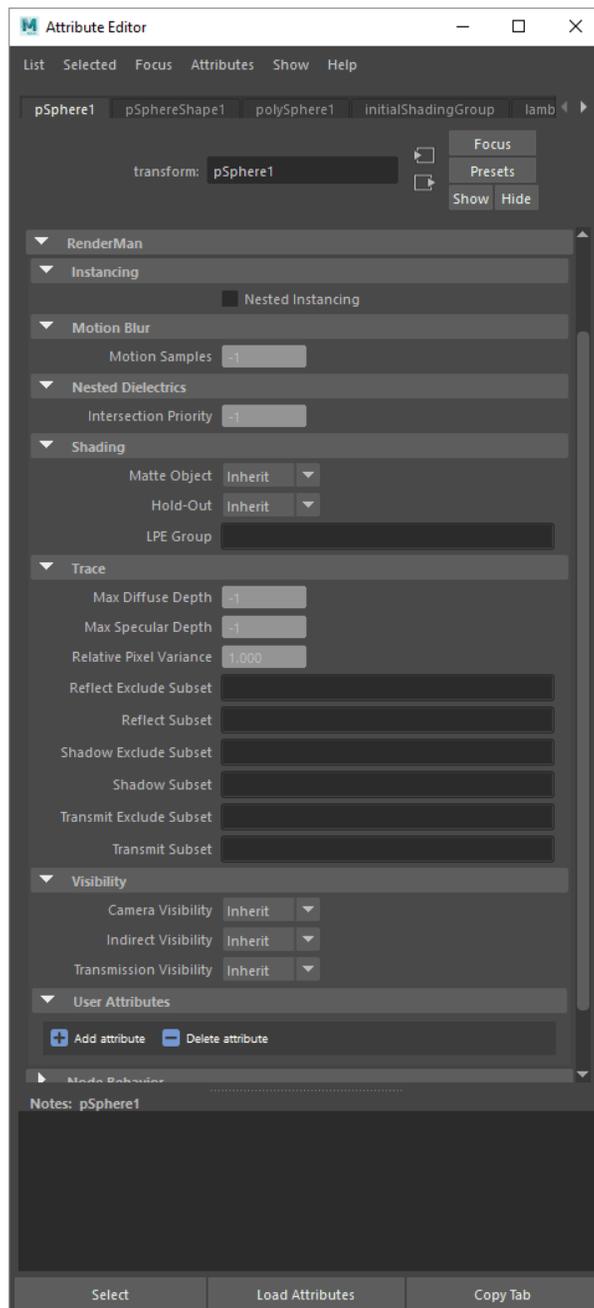


Geometric Settings

When assigning instance attributes in Maya, they can be named like [Primvars](#), where controls are found on the shape node. Or as attributes found on the transform node and variable per instance.

Example commands:

```
rfm2.ui.user_attrs.user_attrs_add(data_attr, nodelist, pdict) -> add to one or more nodes  
rfm2.ui.user_attrs.user_attrs_del(data_attr, nodelist, attrlist) -> delete from one or more nodes  
rfm2.ui.user_attrs.user_attrs(node) -> list all user attributes
```



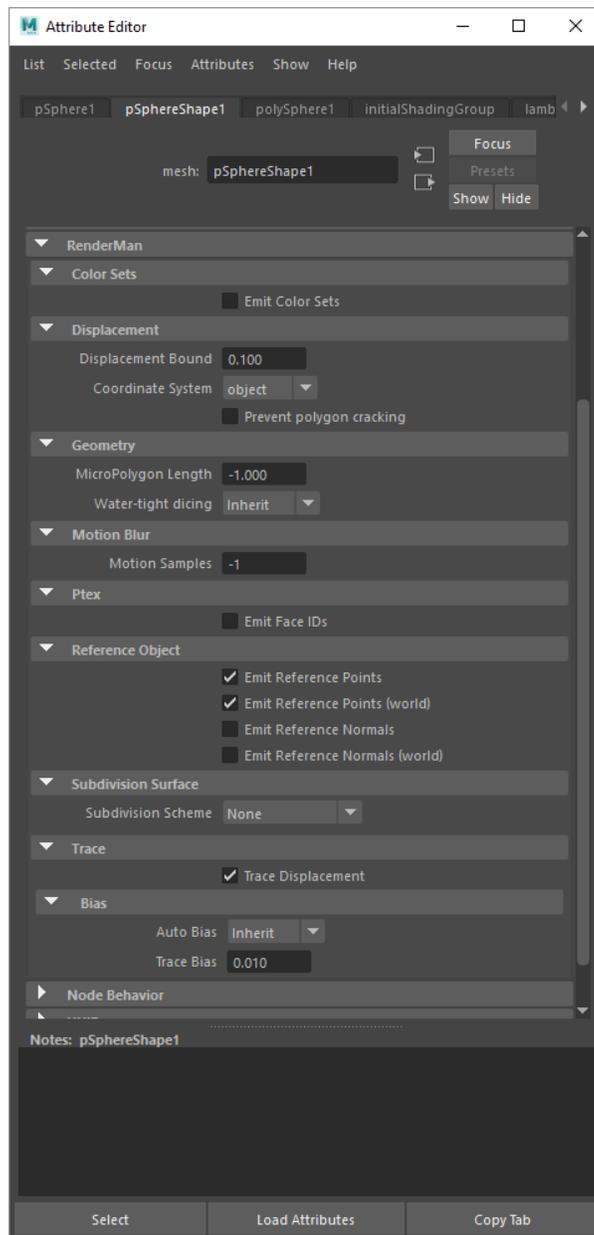
Common

Name	Type	Default	Description
grouping:membership	<i>string</i>	<i>empty</i>	Grouping membership used for linking.
identifier:id	<i>int</i>	0	Lower 32 bits of 64 bit object id.
identifier:id2	<i>int</i>	0	Upper 32 bits of 64 bit object id.
identifier:pegroup	<i>string</i>	<i>empty</i>	Grouping membership used for light path expressions.
identifier:name	<i>string</i>	<i>empty</i>	Object instance name.

Shading

Name	Type	Default	Description
lightfilter:subset	<i>string</i>	<i>empty</i>	Active light filter groups in lighting.
lighting:excludesubset	<i>string</i>	<i>empty</i>	Exclude light groups from lighting.
lighting:mute	<i>int</i>	0	Mutes light emission.
lighting:subset	<i>string</i>	<i>empty</i>	Light groups active in lighting.
Ri:Matte	<i>int</i>	0	Indicates matte object.
Ri:ReverseOrientation	<i>int</i>	0	Flip shading normals.
Ri:Sides	<i>int</i>	2	Geometry can be one or two sided.
shade:indexofrefraction	<i>float</i>	-1	Override material IOR for nested dielectrics.
shade:relativepixelvariance	<i>float</i>	1	PixelVariance multiplier for camera visible objects.
trace:holdout	<i>int</i>	0	Indicates holdout object.
trace:intersectpriority	<i>int</i>	0	Raytrace intersection priority for nested dielectrics.
trace:maxdiffusedepth	<i>int</i>	1	Maximum diffuse light bounces.
trace:maxspeculardepth	<i>int</i>	2	Maximum specular light bounces.
trace:reflectexcludesubset	<i>string</i>	<i>empty</i>	Exclude object groups from reflections.
trace:reflectsubset	<i>string</i>	<i>empty</i>	Object groups visible to reflections.
trace:shadowexcludesubset	<i>string</i>	<i>empty</i>	Exclude object groups from casting shadows.
trace:shadowsubset	<i>string</i>	<i>empty</i>	Object groups active in shadows.
trace:transmitexcludesubset	<i>string</i>	<i>empty</i>	Exclude object groups from refractions.
trace:transmitsubset	<i>string</i>	<i>empty</i>	Object groups visible to refractions.
visibility:camera	<i>int</i>	1	Indicates if object is visible to camera rays.
visibility:indirect	<i>int</i>	1	Indicates if object is visible to indirect (reflection and refraction) rays.
visibility:transmission	<i>int</i>	1	Indicates if object is visible to shadow rays.

[Link](#)



Added notes:

Emit Color Sets - Emits color sets assigned to objects, this is especially useful when rendering MASH objects with procedural coloring.

Prevent Polygon Cracking - Typically it's expected that you displace [subdivision surfaces](#). However, should you need to displace a polygonal surface with "hard" normals, this option will attempt to prevent the object from coming apart once it's displaced.

Emit Face IDs - This allows surfaces to make use of Ptex texturing.

Reference Object - `_WPref` and the `place3d` with the reference object should be parented below the object that you are animating. `_WPref` is necessary for instances to have the texture stick in the same way. However, during IPR if you move/translate your object and it does not deform, it is not re-evaluated and the `_WPref` is not updated if only the *transform* has changed. You will only see the correct values if you restart the render or trigger an update on the mesh somehow (for instance, tweaking the displacement bound).



These may also be referred to as "master attributes" for clarity versus [Instance Attributes](#) which may be varied per instance.

Common

Name	Type	Default	Description
identifier:object	string	empty	Object shape name.

Shading

Name	Type	Default	Description
derivatives:extrapolate	integer	1	Extrapolated smooth normals across grid boundaries.
displacement:ignorereferenceinstance	int	0	Indicates if displacement shading should ignore properties of the reference instance.
displacementbound:CoordinateSystem	string	object	The name of the coordinate system that the displacement bound is measured in.
displacementbound:offscreen	int	0	Apply displacementbound to offscreen geometry when dicing. Geometry that is entirely offscreen, but displaces into view may be prone to undertessellation because of the offscreen dicing strategy. This can be corrected by enabling this control and setting a reasonable displacementbound. Doing so will incur a performance penalty commensurate with the size of the displacement bound.
displacementbound:sphere	float	0	Maximum displacement distance used to compute object bounds. This value should be as tight as possible.
Ri:Orientation	string	outside	Geometry winding order that determines surface normal. This attribute effects lighting and displacement. Supported values: inside, outside.
trace:autobias	integer	1	Enable automatic raytrace bias.
trace:bias	float	0.01	Manual raytrace bias in object space. Small values should be used to avoid artifacts such as shadow acne.
trace:displacements	integer	1	Enable displacement shading.

Dicing

Name	Type	Default	Description
dice:multipolygonlength	float	1	Micropolygon distance in raster space for "instanceprojection" dicing. Values are expressed in pixel size.
dice:offscreenstrategy	string	viewfrustumdistance	Dicing method of objects outside the viewing frustum. Supported values: viewfrustumdistance, worlddistance, objectdistance.
dice:rasterorient	integer	1	Changes micropolygon size according to the viewing angle of a surface. When rasterorient is on, surfaces are coarsely diced at a glancing angle. This feature is very useful for ground planes and other large objects that are seen at an angle and it should be disabled for geometry that is instanced several times as it can be seen from different angles as well as when displacement details are lost.
dice:referencecamera	string	empty	Specify the camera used for dicing. If no reference camera is specified, RenderMan will use the primary camera.
dice:referenceinstance	string	empty	Specify the reference instance used for dicing and displacement shading. The reference instance is used to drive dicing and displacement based on its position, scale, user attributes, and scoped coordinate systems. Reference instances are specified by its identifier:name attribute (instance name). If no reference instance is specified, RenderMan will automatically pick the nearest instance inside the primary camera's view frustum.
dice:strategy	string	instanceprojection	Dicing method of objects within the viewing frustum. Supported values: instanceprojection, worlddistance, objectdistance.
dice:worlddistancelength	float	-1	Micropolygon distance in world space for "worlddistance" dicing or object space for "objectdistance" dicing.
Ri:GeometricApproximationFocusFactor	float	0	Allows the renderer to use more coarse dicing for blurry objects due to depth of field.

Ri: GeometricApproximationMotionFactor	<i>float</i>	0	Allows the renderer to use more coarse dicing for blurry objects due to motion blur.
--	--------------	---	--

Points

Name	Type	Default	Description
falloffpower	<i>float</i>	0	For use with points, if not supplied, or set to zero, the points will have a hard edge. A value of 1 is a "reasonable" value that emulates the usual cosine based falloff; this will likely be the goto value for most people doing volumetric particle effects. Values between 0 and 1 makes the falloff faster, eroding the point faster - point has "less presence". Values higher than 1 (up to infinity) makes the falloff slower to the point of being non-existent.

Volume

Name	Type	Default	Description
dice:minlength	<i>float</i>	-1	Volume minimum dice length. Negative indicates to automatically compute this value.
dice:minlengthspace	<i>string</i>	<i>empty</i>	Coordinate space of dice:minlength.
Ri:Bound	<i>float[6]</i>	0 0 0 0 0 0	Volume bounds.
volume:dsominmax	<i>integer</i>	0	

SubdivisionMesh

Name	Type	Default	Description
dice:pretessellate	<i>integer</i>	1	Pre-tessellate subdivision geometry to polygons.
dice:watertight	<i>integer</i>	0	Tessellate geometry with no holes. Watertight geometry requires less raytrace bias.
shade:faceset	<i>integer[n]</i>	<i>empty</i>	Active geometry face indexes.
stitchbound:CoordinateSystem	<i>string</i>	<i>empty</i>	
stitchbound:sphere	<i>float</i>	0	

NuPatch

Name	Type	Default	Description
trimcurve:sense	<i>string</i>	inside	Supported values: inside, outside.

PolygonMesh

Name	Type	Default	Description
polygon:concave	<i>integer</i>	1	Allow concave polygons.
polygon:smoothdisplacement	<i>integer</i>	0	Output smoothed (per-vertex) normals as Ndsp primvar, if polygon:smoothnormals hasn't already inserted smooth normals.
polygon:smoothnormals	<i>integer</i>	0	Smooth (per-vertex) normals if not provided.

Procedural

Name	Type	Default	Description
procedural:immediatesubdivide	<i>integer</i>	0	
procedural:reentrant	<i>integer</i>	0	

[Link](#)