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	Туре	Default	Description
grouping:membership	string	empty	Grouping membership used for linking.
identifier:id	int	0	Lower 32 bits of 64 bit object id.
identifier:id2	int	0	Upper 32 bits of 64 bit object id.
identifier:lpegroup	string	empty	Grouping membership used for light path expressions.
identifier:name	string	empty	Object instance name.

Shading

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

Shading

Name	Туре	Default	Description			
derivatives: extrapolate	integer	1	Extrapolated smooth normals across grid boundaries.			
displacemen t: ignorerefere nceinstance	int	0	Indicates if displacement shading should ignore properties of the reference instance.			
displacemen tbound: CoordinateS ystem	string	object	The name of the coordinate system that the displacement bound is measured in.			
displacemen tbound: 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.			
displacemen tbound: 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: displacemen ts	integer	1	Enable displacement shading.			

Dicing

Name	Туре	Default	Description			
dice: micropolygo nlength	float	1	Micropolygon distance in raster space for "instanceprojection" dicing. Values are expressed in pixel size.			
dice: offscreenstr ategy	string	viewfrustu mdistance	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: referenceca mera	string	empty	Specify the camera used for dicing. If no reference camera is specified, RenderMan will use the primary camera.			
dice: referencein stance	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 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	instancepr ojection	Dicing method of objects within the viewing frustum. Supported values: instanceprojection, worlddistance, objectdistance.			
dice: worlddistan celength	float	-1	Micropolygon distance in world space for "worlddistance" dicing or object space for "objectdistance" dicing.			
Ri: GeometricA pproximatio nFocusFact or	float	0	Allows the renderer to use more coarse dicing for blurry objects due to depth of field.			

Ri:	float	0	Allows the renderer to use more coarse dicing for blurry objects due to motion blur.
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Points

Name	Туре	Default	Description	
falloffpo wer	float	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	Туре	Default	Description
dice:minlength	float	-1	Volume minimum dice length. Negative indicates to automatically compute this value.
dice:minlengthspace	string	empty	Coordinate space of dice:minlength.
Ri:Bound	float[6]	000000	Volume bounds.
volume:dsominmax	integer	0	

SubdivisionMesh

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

NuPatch

Name	Туре	Default	Description
trimcurve:sense	string	inside	Supported values: inside, outside.

PolygonMesh

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

Procedural

Name	Туре	Default	Description
procedural: immediatesubdivide	integer	0	
procedural:reentrant	integer	0	

Link