This describes a tested workflow for using the RSMB_PRO_Vectors plugin for Nuke to apply motion blur to renders created using Arnold in Maya.

There are at least two ways to render motion vectors with Arnold, this is the way that works with RSMB_PRO_Vectors. RSMB requires vectors from the aiMotionVector shader, not the vectors from the default motionvector AOV. Refer to the linked Arnold documentation.

https://docs.arnoldrenderer.com/display/AFMUG/Custom+Motion+Vector+AOV+with+Motion+Vector+shader
https://docs.arnoldrenderer.com/display/A5AFMUG/Motion+Vector

The following screenshots show how to set up this AOV to get a predictable result
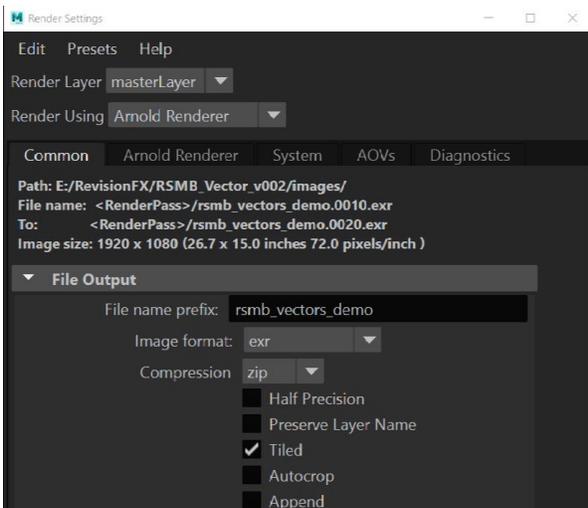
You will need an alpha channel for the objects that you'll be applying motion blur to. You may need to split your scene into layers to keep your elements separate to get the best results. Refer to Maya and Arnold documentation on how to split your scene into layers for rendering.

Make sure that Merge AOVs is unchecked- RSMB PRO Vectors requires the AOV to be in a separate EXR file.

If you're working in a mixed pipeline with Flame or other similar systems that don't typically have a float/ exr workflow, you can render your vectors to a 16 bit tiff, but note that this requires you to change several parameters to work correctly
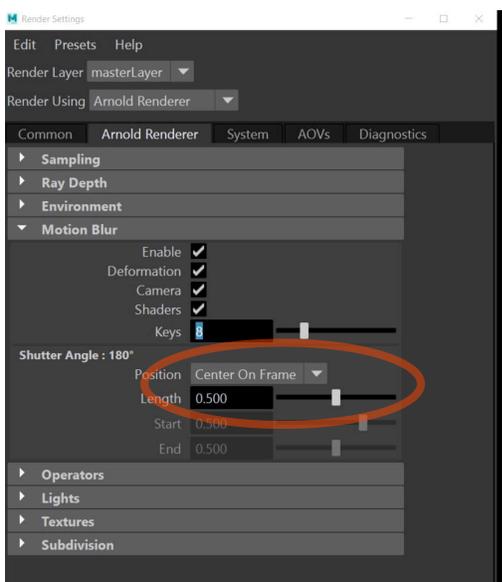
Set the shutter angle for your motion blur. You will be able to scale the blur in RSMB PRO Vectors by changing the Blur Amount and Vector Scale parameters. For Float EXR vectors, a Max displacement of 1. For Tiff 16, Max Displacement should equal the pixel width of the frame. Blur Amount should be the same as shutter length.
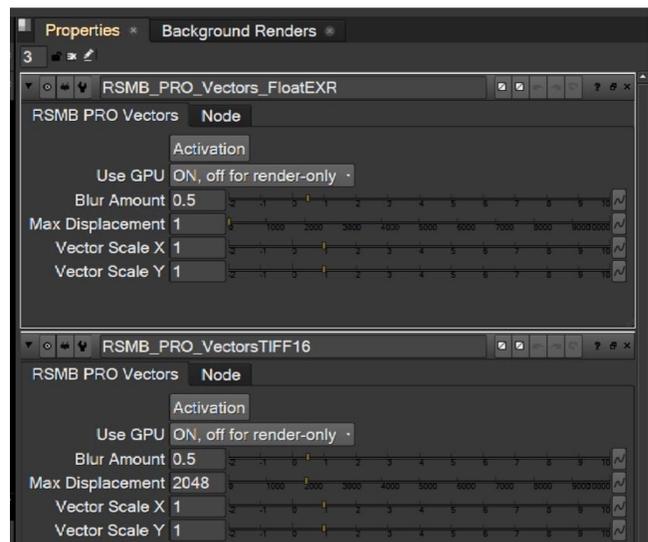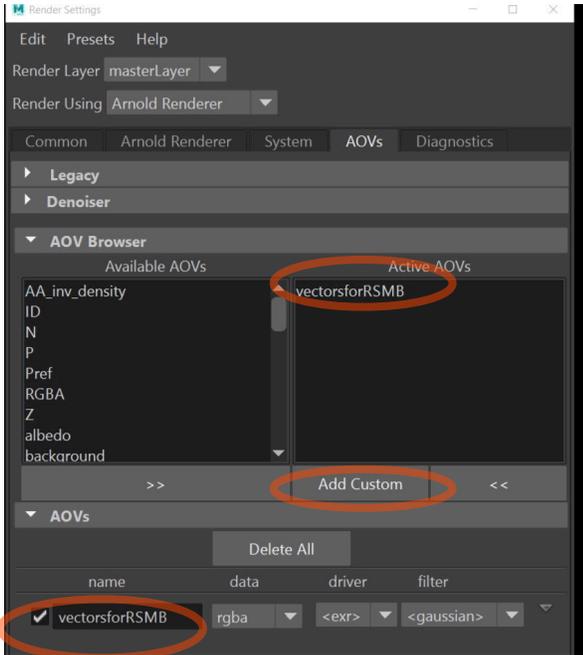
To create your motion vectors AOV, in your Maya to Arnold Render Settings AOV tab, click on "Add Custom" then give your AOV a name- here called "vectorsforRSMB"

Once you've created your AOV, in the Maya Attribute Editor, apply the aiMotionVector shader to your AOV by clicking on the swatch button to the right of the Shader field, which will bring up the "Create Render Node" dialog, where you will find the shader under the available Arnold shaders.
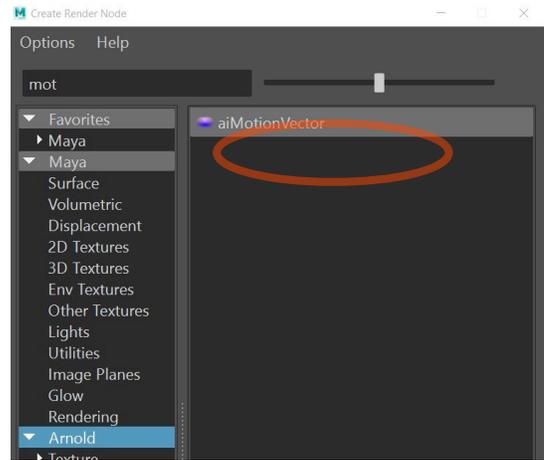

For most pipelines, rendering your vectors to float exr is best. Render your beauty pass and vectors AOV to separate image files - don't merge your AOVs into a single exr file. Check "Encode Raw Vector"
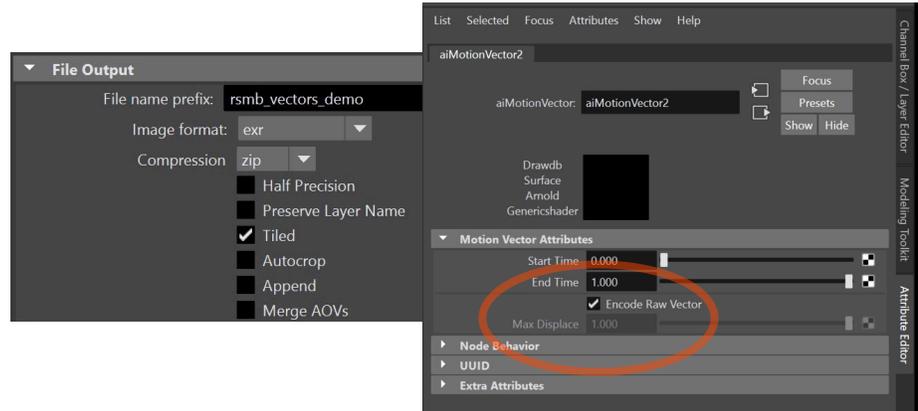
If you have a pipeline that includes Autodesk Flame, you may want to write your vectors into 16 bit tiff files, which will work in both systems. Do not check "Encode Raw Vector" and set the "Max Displace" to the width of your renders (2048 in this example)
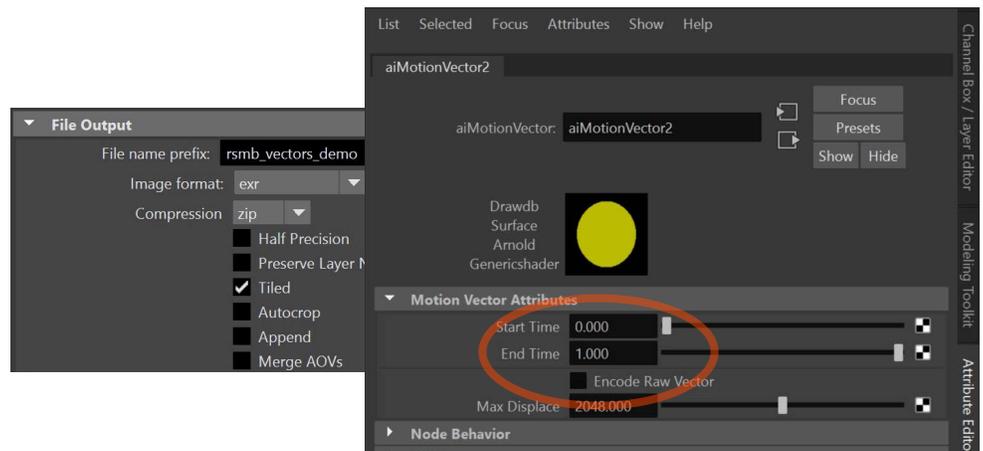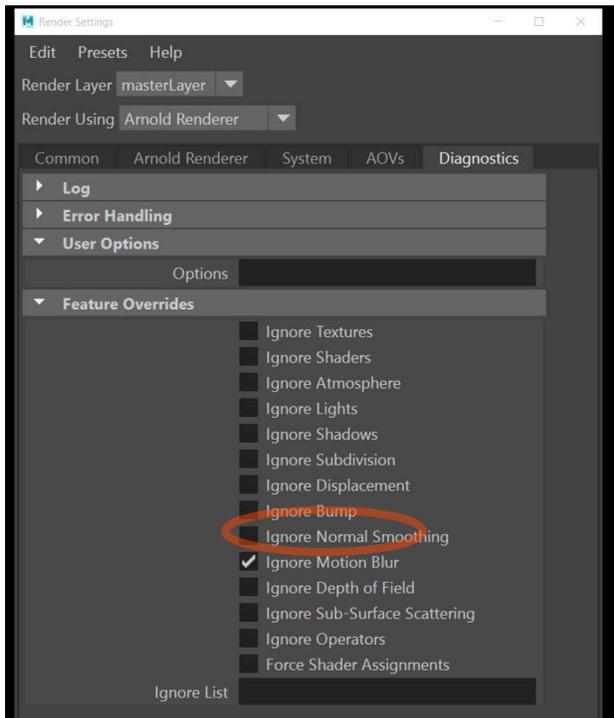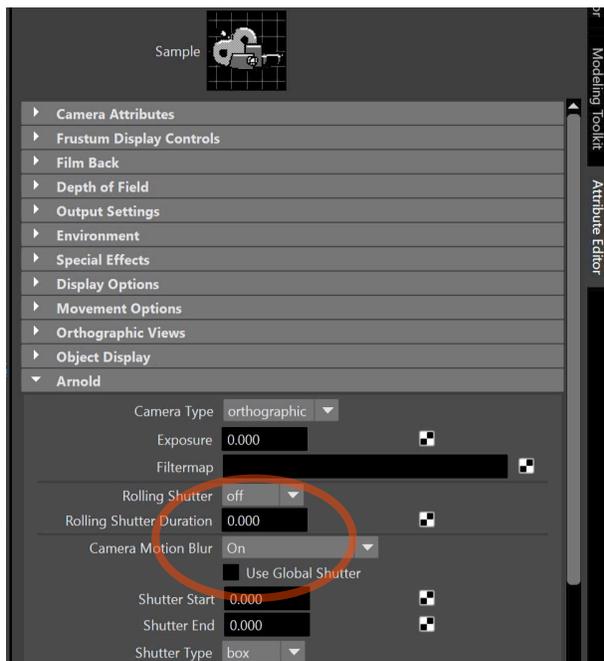
You will run your Arnold render passes with motion blur turned off, so that motion blur can be applied as a post process using RSMB PRO Vectors.

There are two ways to do this

first, in the Diagnostics tab, select "Ignore Motion Blur." When you render, Arnold will create the necessary passes without motion blur.

Second, and perhaps more correct, is to set an instantaneous shutter in the camera attributes for your render camera- this effectively turns off motion blur for renders from the selected camera only, and scales the vectors according to the global motion blur settings. Setting the "Shutter Start" and "Shutter End" to the same value sets the instantaneous shutter.

If you set up your camera this way, you can run your render with Arnold's motion blur turned on by toggling "Use Global Shutter", this way it will apply the global settings to this camera.

No motion blur

Arnold native motion blur

Vectors (scaled for visibility)

RSMB_PRO Vectors motion blur
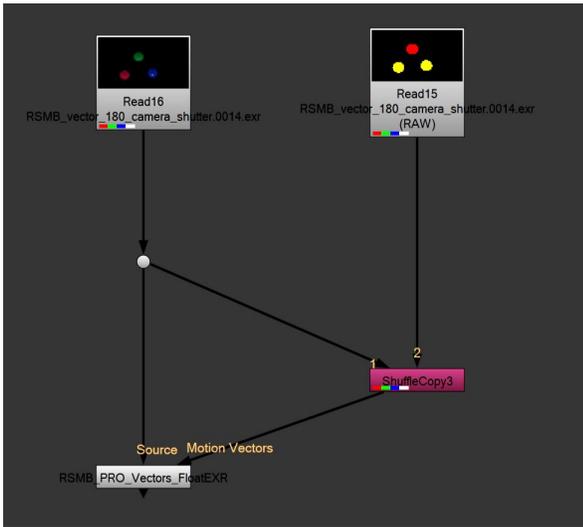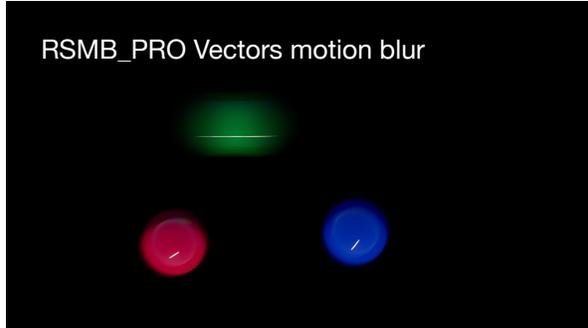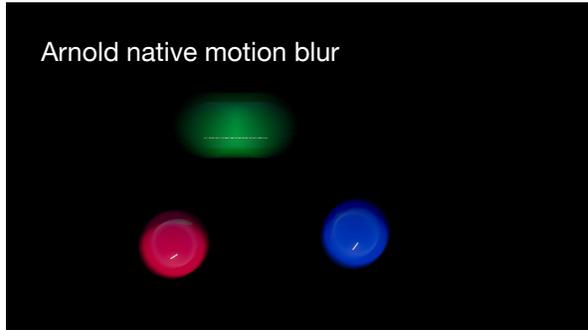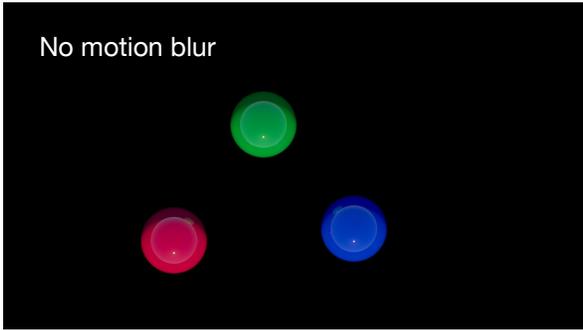
In Nuke, bring in the beauty pass and the vectors, then use a shuffle to copy the alpha channel from the beauty pass into alpha channel of the vectors

The Arnold beauty pass with motion blur shows sampling artifacts- these can be reduced by increasing render quality settings. The RSMB pass shows a similar amount of motion blur, including rotation, without the sampling noise.

Below is a test with the blur amount parameter pushed to 3- the rotation of the blue ball is obvious from the curved highlight.