# VRayPhysicalCamera examples

**Search Keywords:** *camera, physical camera, exposure, f-stop, shutter speed, iso, vignetting, dof, motion blur, sun , sky, 2-point perspective*

*Note: the Sponza Atrium model is created by Marko Dabrovic (http://www.rna.hr) and is one of the models for the CGTechniques Radiosity competition. The Athene model is a free model from the DeEspona Infografica model bank.*

*Note: All the images are rendered using the VRaySun and VRaySky set with their default parameters.*

## Example 1: exposure control - f-number (f-stop)

This parameter controls the aperture size of the virtual camera. Lowering the **f-number** value increases the aperture size and so makes the image brighter, since more light enters the camera. In reverse, increasing the **f-number** makes the image darker, as the aperture is closed. This parameter also determines the amount of the DOF effect, see Example 9.

**Exposure** is *on*, **Shutter speed** is *60.0*, **ISO** is *200*, **Vignetting** is *on*, **White balance** is *white*.
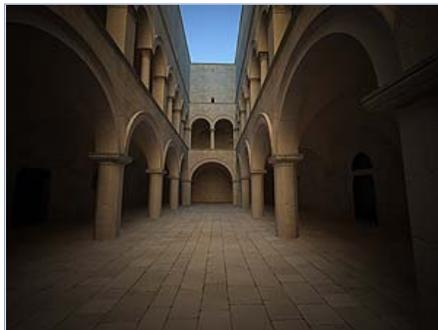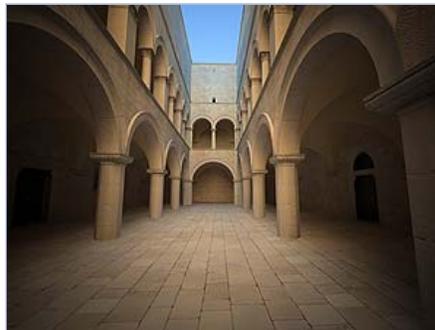


**f-number** is *8.0*          **f-number** is *6.0*          **f-number** is *4.0*

## Example 2: exposure control - Shutter speed

This parameter determines the exposure time for the virtual camera. The longer this time is (small **Shutter speed** value), the brighter the image would be. In reverese - if the exposure time is shorter (high **Shutter speed** value), the image would get darker. This parameter also affects the motion blur effect, see Example 10.

**Exposure** is *on*, **f-number** is *8.0*, **ISO** is *200*, **Vignetting** is *on*, **White balance** is *white*.
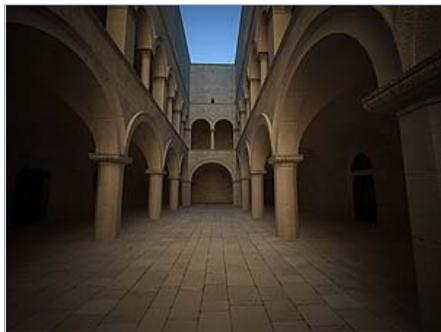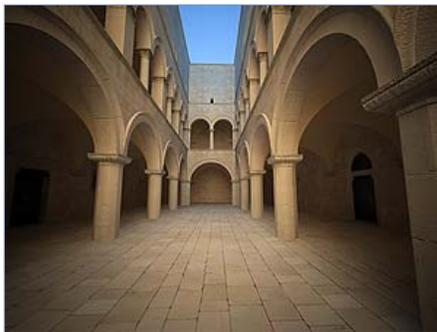
| **Shutter speed** is *60.0* | **Shutter speed** is *30.0* | **Shutter speed** is *125.0* |

## Example 3: Exposure control: film speed (ISO )

This parameter determines the sensitivity of the film and so the brightness of the image. If the film speed (ISO) is high (film is more sensitive to the light), the image is brighter. Lower ISO values mean that the film is less sensitive and produces a darker image.

**Exposure** is *on*, **Shutter Speed** is *60.0*, **f-number** is *8.0*, **Vignetting** is *on*, **White balance** is *white*.
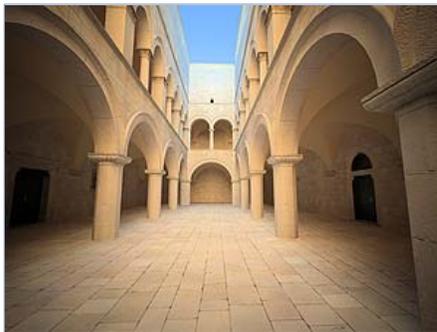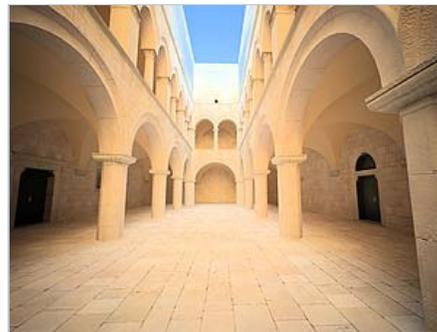


| **ISO** is *400* | **ISO** is *800* | **ISO** is *1600* |

## Example 4: Zoom factor

This parameter determines the zooming (In and Out) of the final image. It doesn't move the camera forward nor backwards.

**Exposure** is *on*, **f-number** is *8.0*, **Shutter speed** is *60.0*, **ISO** is *200.0*, **Vignetting** is *on*, **White balance** is *white*
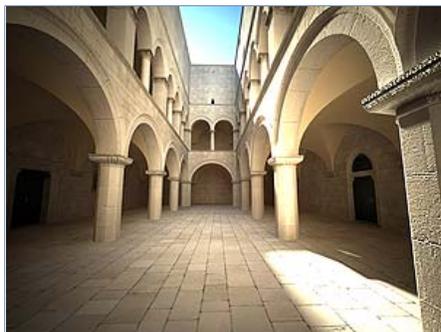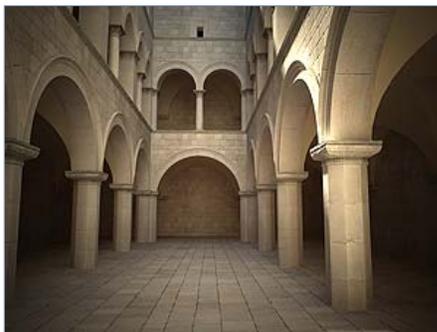


| **Zoom factor** is *1.0* | **Zoom factor** is *2.0* | **Zoom factor** is *0.5* |

## Example 5: Vertical shift (Camera Correction)

Using this parameter you can archive the so called "*2 point perspective*". To have that done automatically, use the **Guess vertical shift** button.
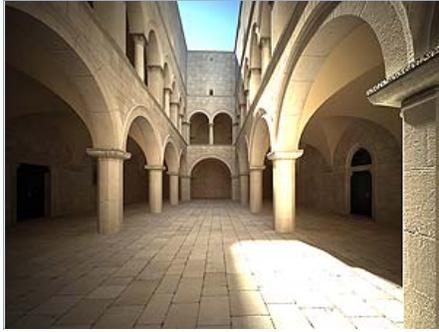


*vertical shift: Guess (2 point)*          *vertical shift: -0.5*          *vertical shift: 0.5*

## Example 6: Distortion

The difference between the two types of distortion is slightly visible. The **Cubic** type should be used in some camera tracking programs like **SynthEyes**, **Boujou** etc.



**Distortion** is **1.0**, **Distortion type** is *Quadratic*



**Distortion** is **-1.0**, **Distortion type** is *Quadratic*
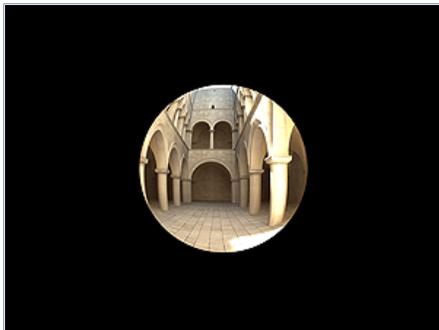


**Distortion** is **1.0**, **Distortion type** is *Cubic*



**Distortion** is **-1.0**, **Distortion type** is *Cubic*

## Example 7: Vignetting

This parameter controls the simulating the optical vignetting effect of real-world cameras.
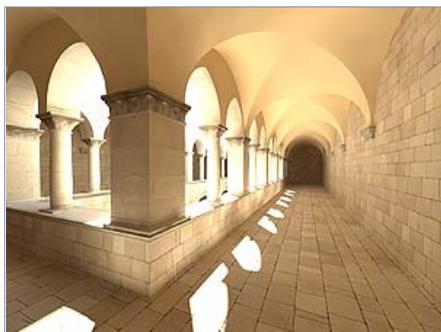
**Vignetting** is **0.0** (vignetting is disabled)



**Vignetting** is **1.0**

## Example 8: White balance

Using the white balance color allows additional modification of the image output. Objects in th scene that have the specified color will appear white in the image. E.g. for daylight scenes th should be peach color to compensate for the color of the sun light etc.

**Exposure** is **on**, **f-number** is **8.0, Shutter speed** is **200.0**, **ISO** is **200.0, Vignetting** is **on**
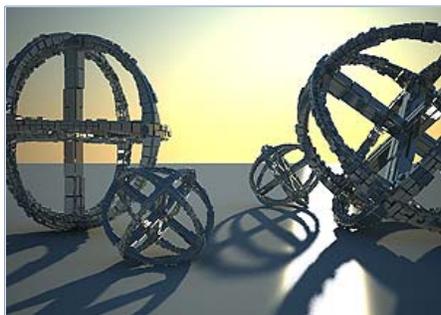


**White balance** is **white (255,255,255)**
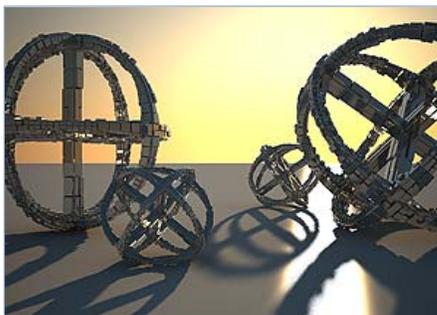


**White balance** is **blueish (145,65,255)**
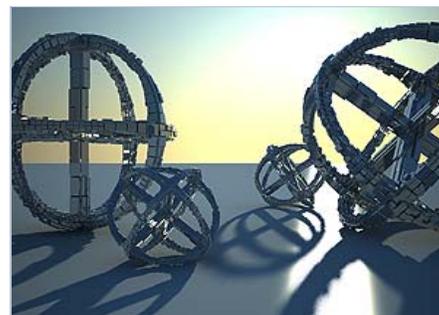


**White balance** is **peach (20,55,245)**

## Example 9: Depth Of Field (DOF)

To enable the DOF effect you need to turn **on** the **Depth-of-field** option in the **Sampling** rollout of the physical camera. The effect is most strongly seen when the camera is close to some object, like when doing a "macro" photo. For a strong DOF effect, the camera ap must be open wide (i.e. small **f-number** value). That may lead to a very burnt and bright image, so to preserve the same illuminosity over the whole image, the shutter speed mu shortened. And at last but not at least the **focus distance** determines which part of the scene will be actually on focus. To get the focus near, you would need a small value and reverse - higher value for far focus.

**Exposure** is **on**, **f-number** is **1.0, Shutter speed** is **4000.0**, **ISO** is **200.0, Vignetting** is **on**

**DOF** is *off*

**DOF** is *on*, **Focus distance** is *400*
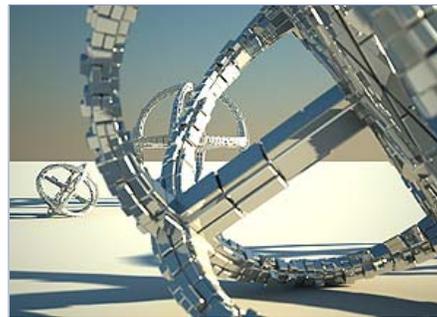
**DOF** is *on*, **Focus distance** is *4000*

## Example 10: Motion Blur (MB)

To enable the motion blur effect you need to turn *on* the **Motion blur** checkbox in the **Sampling** rollout of the physical camera. The amount of the motion blur is determined by the speed of the moving object itself as well as the **Shutter speed** setting of the camera. Long shutter speeds will produce more motion blur, as the movement of the object is tracked over a longer in time. In reverse, short shutter speeds will produce less motion blur effect. Keep in mind that to preserve the same illuminosity over the whole image, the **f-number** value has to be corrected as well.

Note that in the example the far object is moving quicker than the near one, which cases difference in the motion blur effects.

**Exposure** is *on*, **ISO** is *200.0*, **Vignetting** is *on*
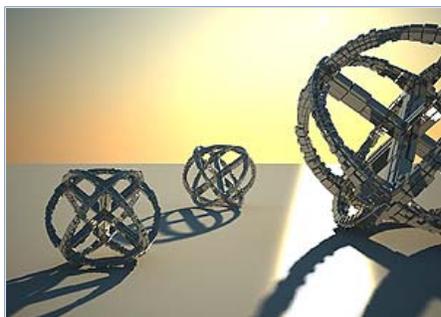


**Motion blur** is *off*
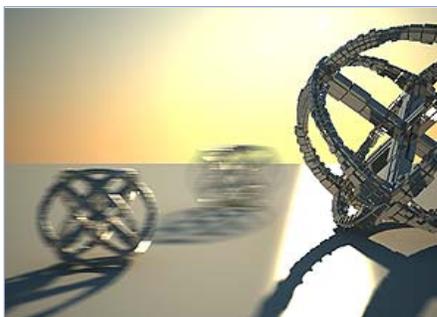
**Motion blur** is *on*, **f-number** is *16.0*, **Shutter speed** is *30.0*

**Motion blur** is *on*, **f-number** is *8.0*, **Shutter speed** is *125.0*