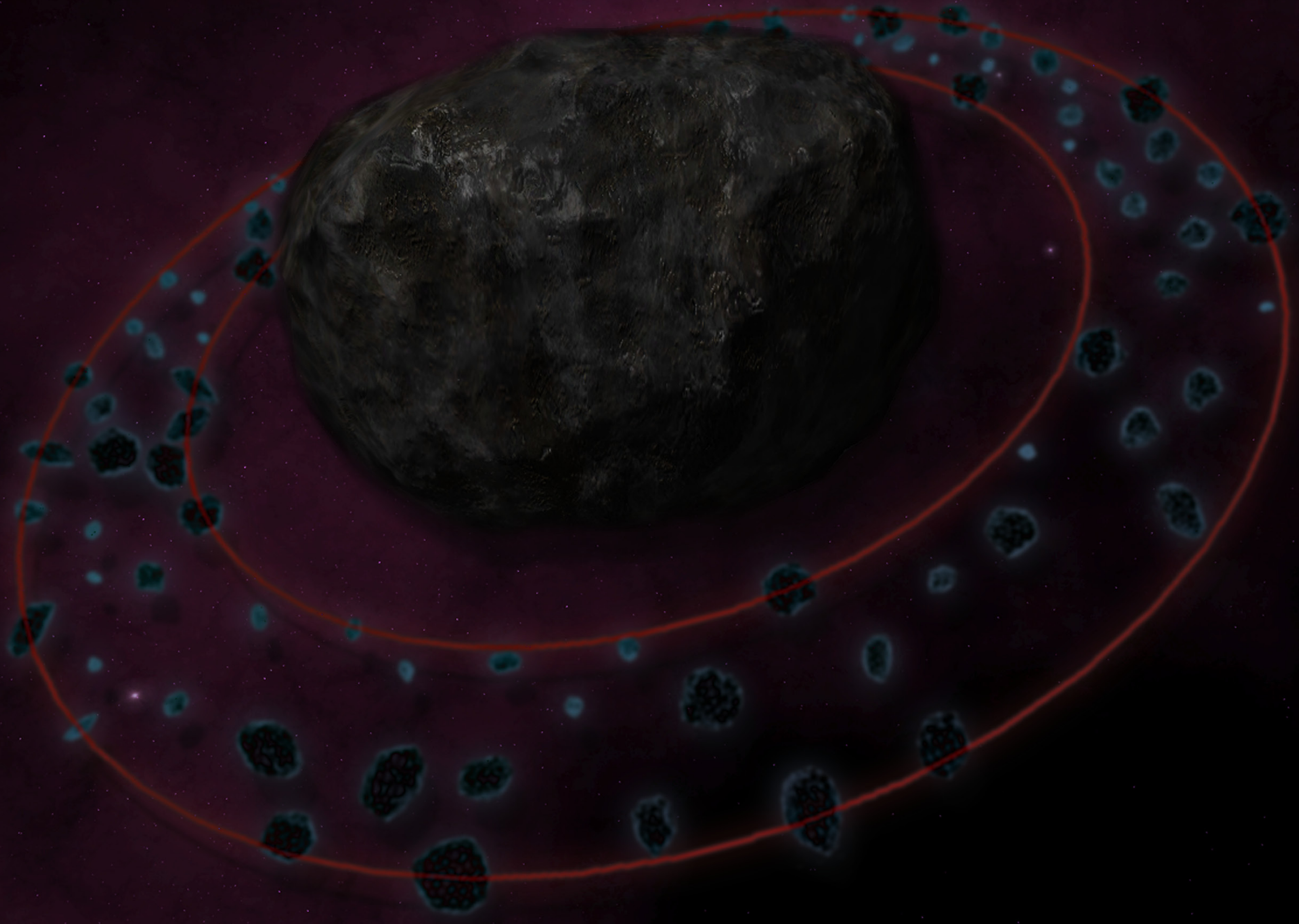
AFC



ASTEROID FIELD CREATOR DOCUMENTATION

AFC is unity script for creating fields filled with random positioned asteroids. It has several field container options such as rect, disc (ring) or sphere. Amongst features it can spawn random positions and rotations for every game start or used as already predefined and created field. It makes good use for random or procedural stage creation. Along with script there are 11 detailed asteroid model prefabs with RGB-Gloss diffuse and normal map in 1024x1024 resolution and space skybox in 2048x2048 res. Script tool is written in unityscript (.js) and it has custom editor inspector for ease of use.

Installation and usage

For Creating container field you should drag "AsteroidFieldCreator.js" on game object which will be parent of all created asteroids. On creation all spawned objects are set as child of that object. For custom inspector editor "AFCEditor.js" should be placed in "Assets/Editor" folder of your working project. And for ease of use objects that we plan to use with AFC should be in Resources folder though not necessary.

Althouth it is called asteroid creator, this tool can serve for several purposes of spawning objects inside container. Like if we want for some reason avoid particles we can make with this star fields, warp tunnels, place planets in space or do some random debris in some field.I even used it to create clouds on some places and even instantiate fishes in pond or create spherical nebulas.

This tool is used only for easier manipulate spawn container not assigning scripts to asteroids or objects. For ease of use we shoud use prefabs with already attached behaviour scripts, like in this case asteroid prefabs already have random rotation scripts and colliders attached to them.

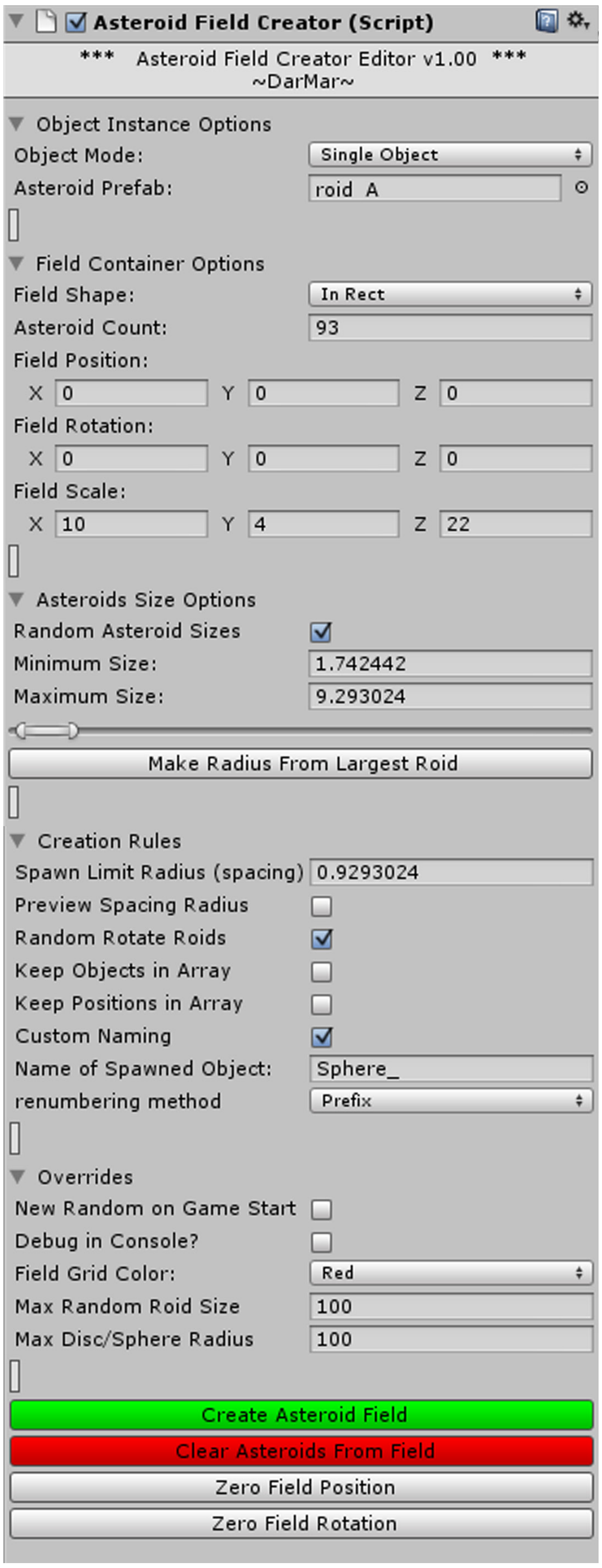
For proper use all prefabs we want to spawn should have collider atached to them so script can check if two or more objects already takes same place in space.

This tool is tested and fuly working in several occasions. If it throws error than some unlogical thing is being done. Like too many large objects in small container or too big spacing for too small container. So you should be aware of that.

Code is as stated above written in unity .js and opened to see and modify to anyone, no hidden parts and fully commented for easier understanding of whats happening in there.

For any question or bug report you should contact me on: *nowteam33@gmail.com*
If any bug or suggestion appears ill be more than glad to repair it.

Thanks,
DarMar



Asteroid Field Creator (Script)

*** Asteroid Field Creator Editor v1.00 ***
~DarMar~

Object Instance Options
- Object Mode: Single Object
- Asteroid Prefab: roid A

Field Container Options
- Field Shape: In Rect
- Asteroid Count: 93
- Field Position: X 0 Y 0 Z 0
- Field Rotation: X 0 Y 0 Z 0
- Field Scale: X 10 Y 4 Z 22

Asteroids Size Options
- Random Asteroid Sizes ✓
- Minimum Size: 1.742442
- Maximum Size: 9.293024

Creation Rules
- Spawn Limit Radius (spacing) 0.9293024
- Preview Spacing Radius ☐
- Random Rotate Roids ✓
- Keep Objects in Array ☐
- Keep Positions in Array ☐
- Custom Naming ✓
- Name of Spawned Object: Sphere_
- renumbering method Prefix

Overrides
- New Random on Game Start ☐
- Debug in Console? ☐
- Field Grid Color: Red
- Max Random Roid Size 100
- Max Disc/Sphere Radius 100

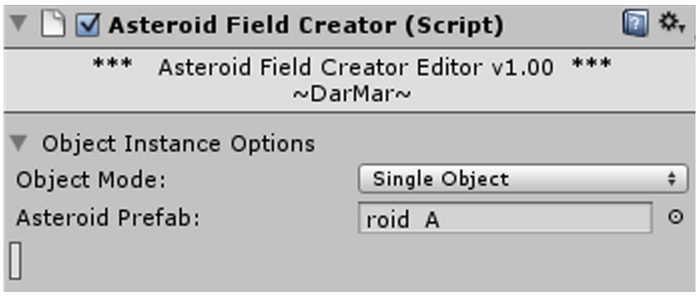
http://nowteam.wordpress.com/

OBJECT INSTANCE OPTIONS

Single Object
This option is good to use in situations when memory resources are low. So we can use one object and one material to lower draw calls. Fact that every roid can have his random size and rotation makes pretty decent difference in field anyways.

Multi Object
Multi object option allow user to put prefabs by himself from different folders in project. Maybe some debris or nebula among asteroids too.

To use it just set number (Count) of prefabs and hit "Set Array" button and empty spaces appear to put game objects inside.



Asteroid Field Creator (Script)

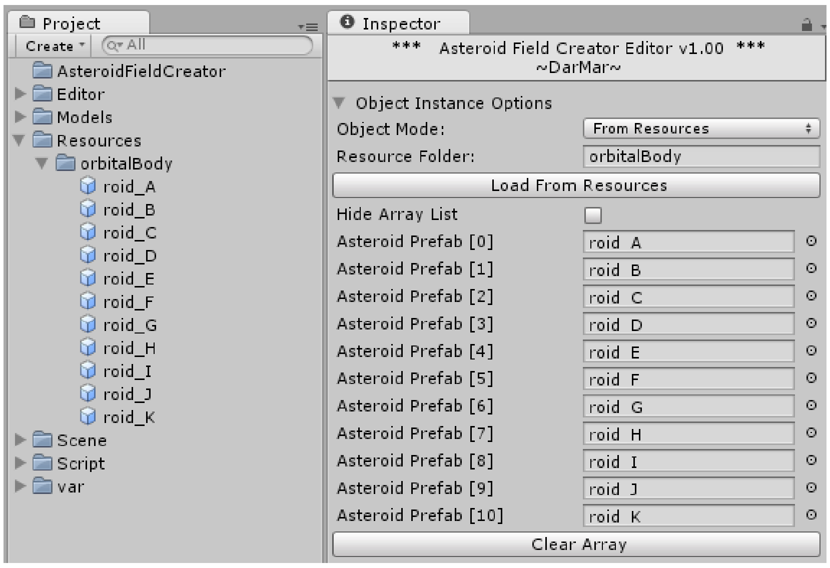
*** Asteroid Field Creator Editor v1.00 ***
~DarMar~

Object Instance Options

Object Mode:	Single Object
Asteroid Prefab:	roid A

From Resources
Although multi object is good idea,
sometimes we have dozens of prefabs, thats why its good to use "From Resources" option.
It loads all objects from given folder into
array. Folder should sit in Resources folder for proper usage.

To use this option there is input text field in which we set name of folder in which our prefabs are stored. String should be standard path method: "Asteroids/smallOnes/funny" ...
If for some reason we decide to load all objects from Resources folder input field should be left empty. When setup is done, hit "Load From Resources " and voila!



Project

```
AsteroidFieldCreator
  Editor
  Models
  Resources
    orbitalBody
      roid_A
      roid_B
      roid_C
      roid_D
      roid_E
      roid_F
      roid_G
      roid_H
      roid_I
      roid_J
      roid_K
  Scene
  Script
  var
```

Inspector

*** Asteroid Field Creator Editor v1.00 ***
~DarMar~

Object Instance Options

Object Mode:	From Resources
Resource Folder:	orbitalBody

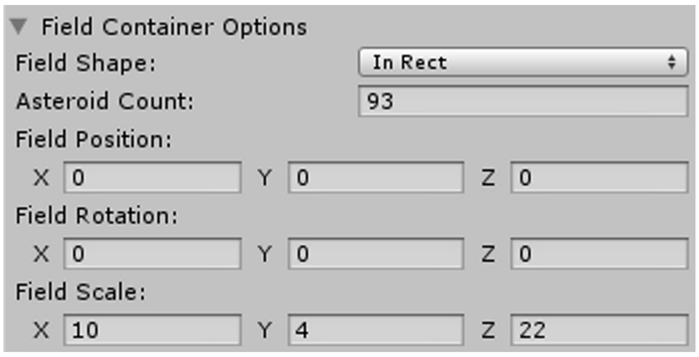
Load From Resources

Hide Array List	☐
Asteroid Prefab [0]	roid A
Asteroid Prefab [1]	roid B
Asteroid Prefab [2]	roid C
Asteroid Prefab [3]	roid D
Asteroid Prefab [4]	roid E
Asteroid Prefab [5]	roid F
Asteroid Prefab [6]	roid G
Asteroid Prefab [7]	roid H
Asteroid Prefab [8]	roid I
Asteroid Prefab [9]	roid J
Asteroid Prefab [10]	roid K

Clear Array

FIELD CONTAINER OPTIONS

Here we define our field shape in which we will spawn asteroids, their count along with rotation and position 'n stuff. There are several basic field shapes to choose from such as rect, disc and sphere.



Field Container Options

Field Shape: In Rect

Asteroid Count: 93

Field Position:

X 0 Y 0 Z 0

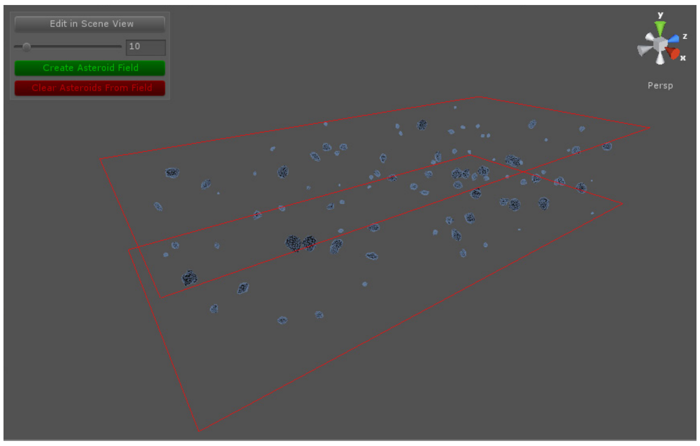
Field Rotation:

X 0 Y 0 Z 0

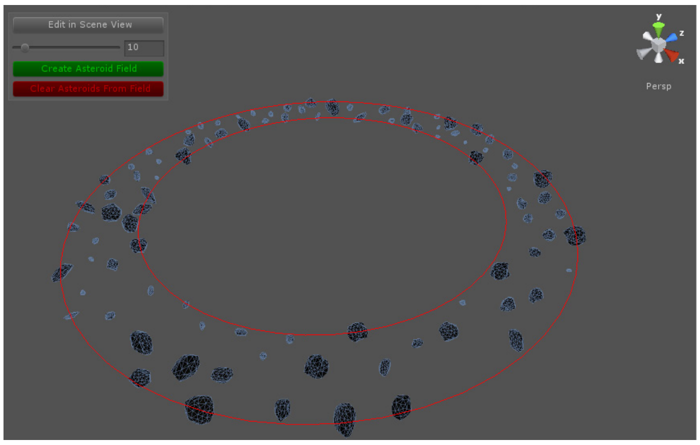
Field Scale:

X 10 Y 4 Z 22

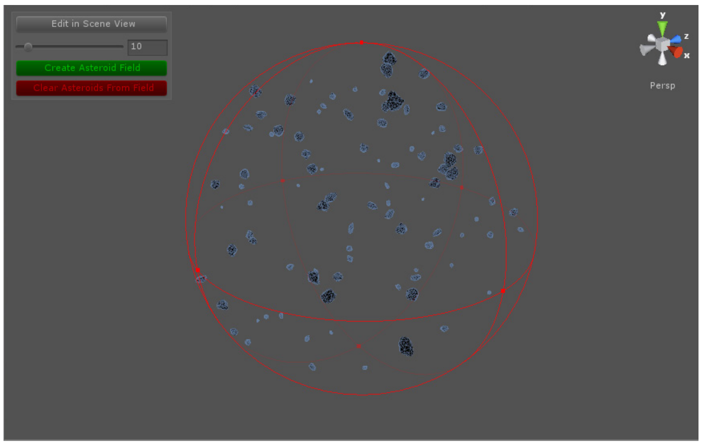
In Rect:
Rect is classical field used most for sidescroller or rail shooter backgrounds. It is pretty straightforward with options. Field position and rotation actually transforms whole game object which is our container, while field scale resize only field borders and leaves our game object scale transform intact.



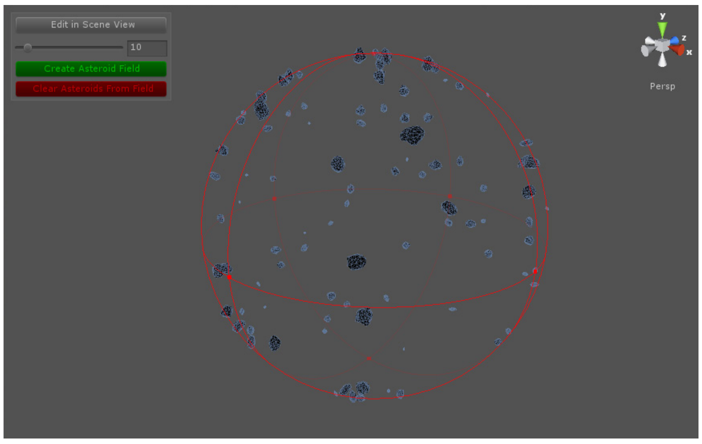
In Disc:
This option is great for round asteroid belts such as belt ring arround saturn, or galaxy like disc filled with objects. It consists of three options: **outer radius** for overall size of disc, **inner radius** if we intent to make ring like belt and **height** which also can lead to tunnel like field (cilyndrical).



In Sphere:
As it says it spawns given number of asteroids inside of sphere. Gives more organic look to group of asteroids than Rect one which is good to use for 360 freedom of movement through space. Roids in this case looks more “natural“.

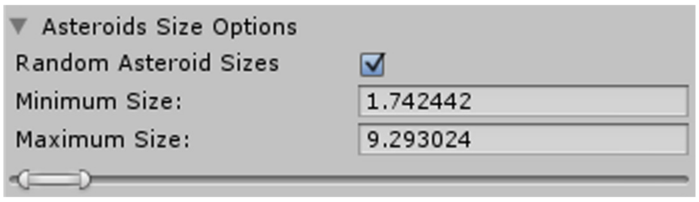


On Sphere:
Spawns given number of asteroids along edge of sphere. If you ever want to put asteroids arround some planet or some rabbit hidding in space this is the option to go.



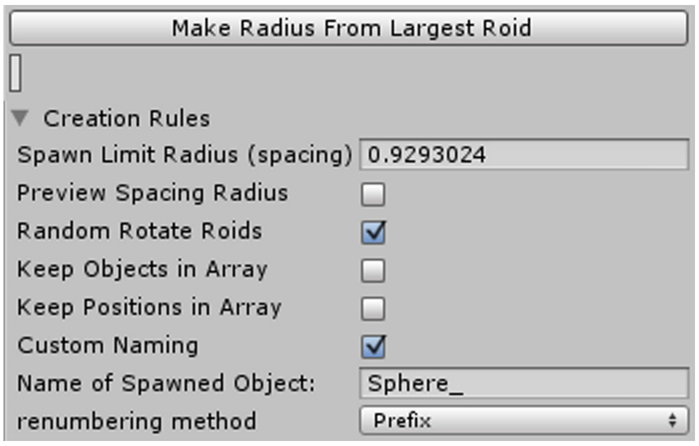
ASTEROID SIZE OPTIONS

Here we deal with size of spawned objects. Even this is called asteroid creator and could be used to spawn more than space rocks, for that reason I left option for single size along with random min-max sizes. If single size is used all object spawned will have same size. If random size is used we can set minimum or maximum size of object we want to spawn. Current maximum size is 100 units, if that isn’t enough and we want for example size of13000 units, please look in overrides options where we can set some additional resizing rules.


▼ Asteroids Size Options

Random Asteroid Sizes	✓
Minimum Size:	1.742442
Maximum Size:	9.293024

CREATION RULES OPTIONS


Make Radius From Largest Roid

▼ Creation Rules

Spawn Limit Radius (spacing)	0.9293024
Preview Spacing Radius	☐
Random Rotate Roids	✓
Keep Objects in Array	☐
Keep Positions in Array	☐
Custom Naming	✓
Name of Spawned Object:	Sphere_
renumbering method	Prefix

Here we can define some additional creation rules for our little asteroid field.

Spawn Limit Radius
Or more preferable called spacing is used to define how much spacing we will have between asteroids when spawning. If we want denser field our limit radius should be lowest we can get, be aware if too low (smaller than biggest asteroid) overlap of asteroids could happen. For bigger spacing amongst each other we should increase spacing radius. For better setup we can hit "Preview Spacing Radius" toggle and little white sphere gizmo will appear and we can visualy adjust our spacing radius. If we still want denser field and we feel a bit lazy, "Make Radius From Largest Roid" button on top should do the trick for us. It will automaticaly set spacing size according to asteroid size.

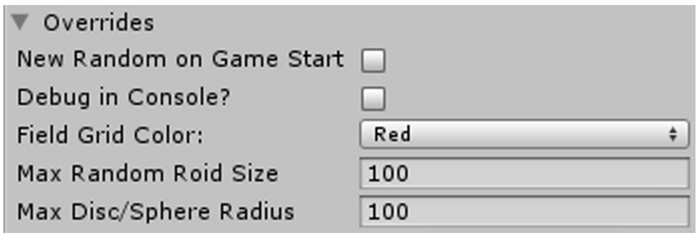
Random Rotate Roids
Is used to randomly rotate roids in field. This is good option to go always anyways, specially when single model prefab is used to create our field because it gives more variety to spawned objects.

Keep Objects in Array
If this option is on, every spawned asteroid will be stored in script's builtin array. In that way is easier to access or cotroll some objects through that way.

Keep Positions in Array
This is mostly used to store just asteroid positions in Vector3 builtin array. Could be used for variety of options like LOD, or making objects spawn later in game on already predefined positions.

Custom Naming
If no custom naming is applied, our roids will be named "Roid_001, Roid_002"...
If we want any different naming method we set that option here.
In input field we put name and in renumbering method we set if we want give our object id or not.
Numbering can be set as prefix or sufix or none of that so we get only name.

OVERRIDES


Overrides
New Random on Game Start ☐
Debug in Console? ☐
Field Grid Color: Red
Max Random Roid Size 100
Max Disc/Sphere Radius 100

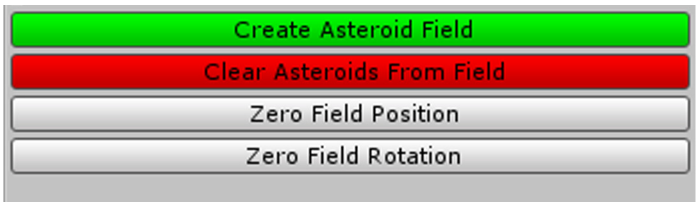
In overrides we can set some additional rules, or override some of existing ones. Not going too much in depth but basic ones needed for better and easier usage are here.

New Random On Game Start
We click this option on if we want new random spawn each time we start new game. Objects are spawned from predefined rules we set before. While working you will notice that if we set our options but dont want to see asteroids in editor, just a new random spawn while in game, asteroids spawned in game will be visible after we stop game in editor. If we don't want that after all is setup, we can comment single line in script editor to avoid that.
That line is on top of code: "@script ExecuteInEditMode() "
Should look like: "// @script ExecuteInEditMode() "
Be aware if you do that, our inspector in editor will not work proper, to use it again, uncoment that line.

Field Grid Color
Sometimes i find myself using several of AFC fields in game, and for convenience and better organisation I use different colors. For example yellow are random on each start, red ones are static, black ones hold only positions and so on. This is just organisational option that we can use.

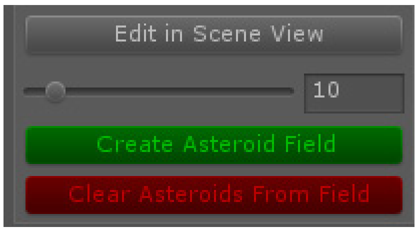
Max Random Roid Size
Here we can override maximum size of asteroid size. For ease of use i did set min max slider to be max on 100 units, in any case if we ever need that extended, you can extend it here.

Max Disc/Sphere Radius
same as above only this one applies to disc or sphere max radius.

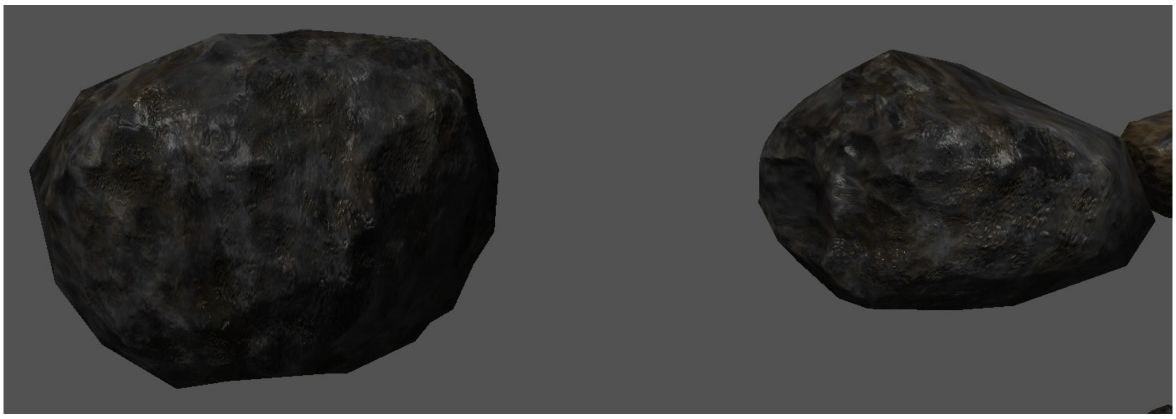


On bottom of inspector we are left with 4 more buttons. Green one executes script and creates asteroid from given options. Red one clears field completely empty. Zero position and rotation resets our game object position and rotation to zero world space.

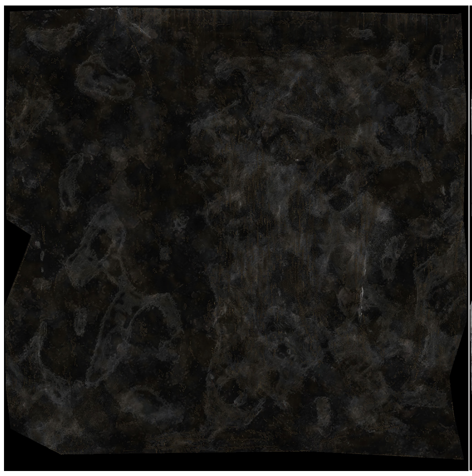
Similar GUI is seen in scene editor but with additional "Edit in Scene View" which gives us additional handles to resize our fields in scene view. Slider below is used to set size of handles. It is applied for all fields except sphere one which is already fully resizeable even without that option.



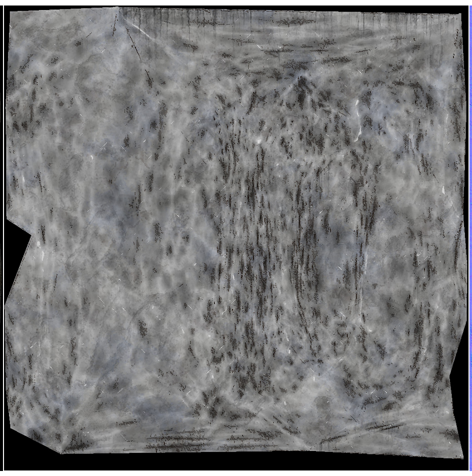
ASTEROIDS



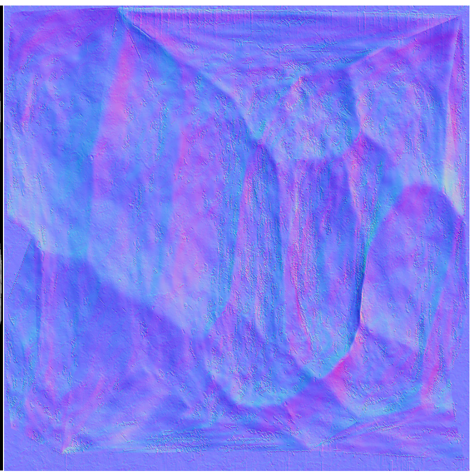
Along with AFC package comes 11 asteroid models with detailed textures.
Originaly hi-poly modeled and painted and retopoed to 100-180 triangles.
In package there are diffuse with gloss in alpha channel texture and normal map.
Textures are originaly made in 1024 size applied to Bumped Specular Unity shader.



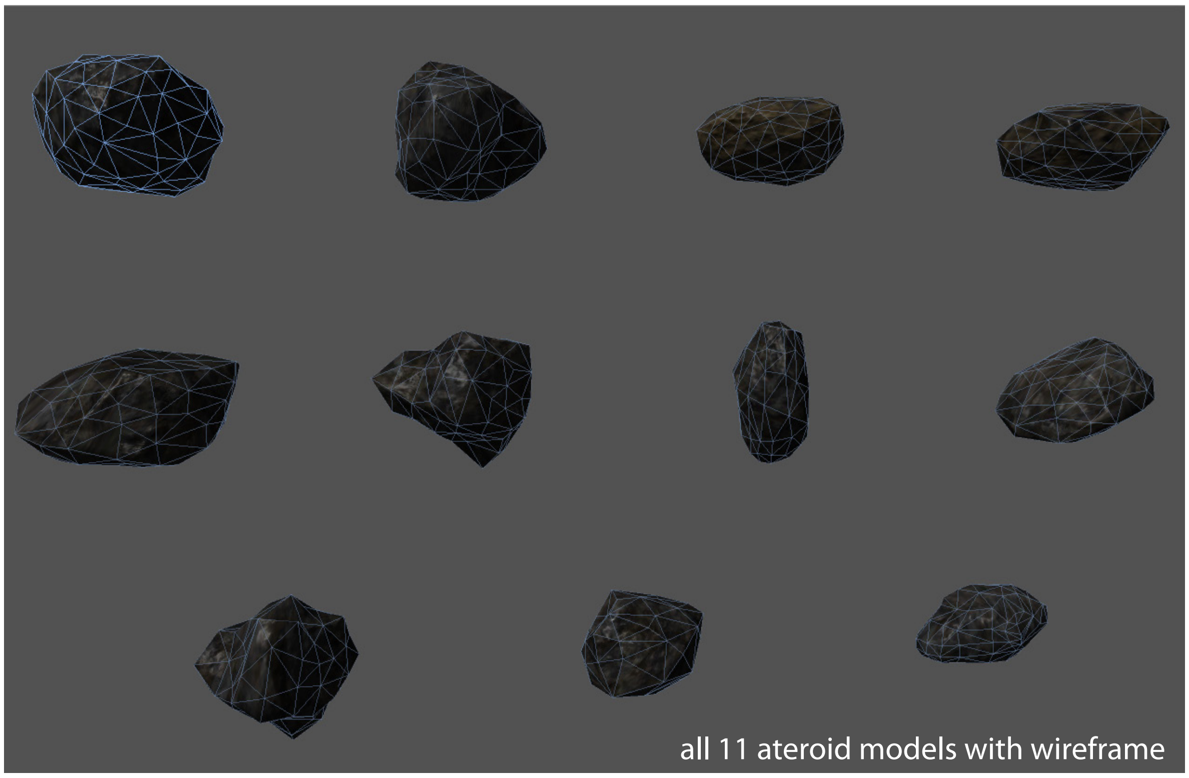
COLOR



GLOSS



NORMAL


all 11 ateroid models with wireframe