

How to Create a Plane constrained to desired Cell Zone/s using the Plane Tool in ANSYS Fluent?

Description

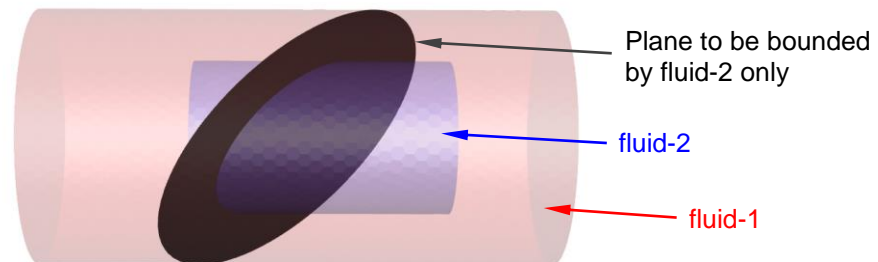
The plane tool option in Fluent allows creation of planes bounded by points. However, none of the options in the plane tool allows to bound the plane by the selected cell zones.

Important

If the plane is to be created normal to a Cartesian co-ordinate, it is easy to create it through an “iso-surface” of *Mesh > Co-ordinate* bounded by the selected cell zones. Therefore, the solution presented in this document is primarily intended for arbitrarily inclined planes created using the Plane tool, typically created using the Three Points method.

Solution

Consider a plane created using the Plane tool option, which is cutting across two cell zones as shown below:

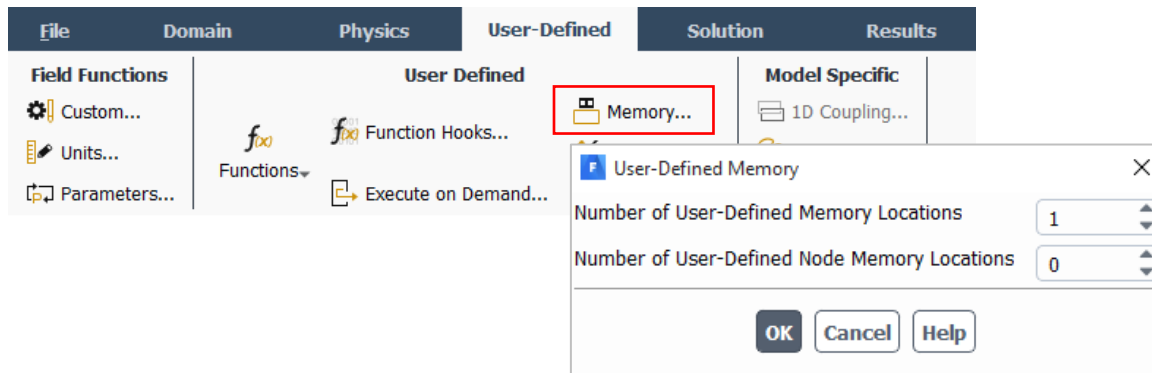


Plane Surface			
New Surface Name			
plane			
Method			
Three Points			
Point 1			
X (m)	Y (m)	Z (m)	Select with Mouse
0.010184	0.03079685	0.00722883	
Point 2			
X (m)	Y (m)	Z (m)	Select with Mouse
0.01248738	0.02286387	-0.0003323	
Point 3			
X (m)	Y (m)	Z (m)	Select with Mouse
0.00735153	0.0139815	-0.0100984	

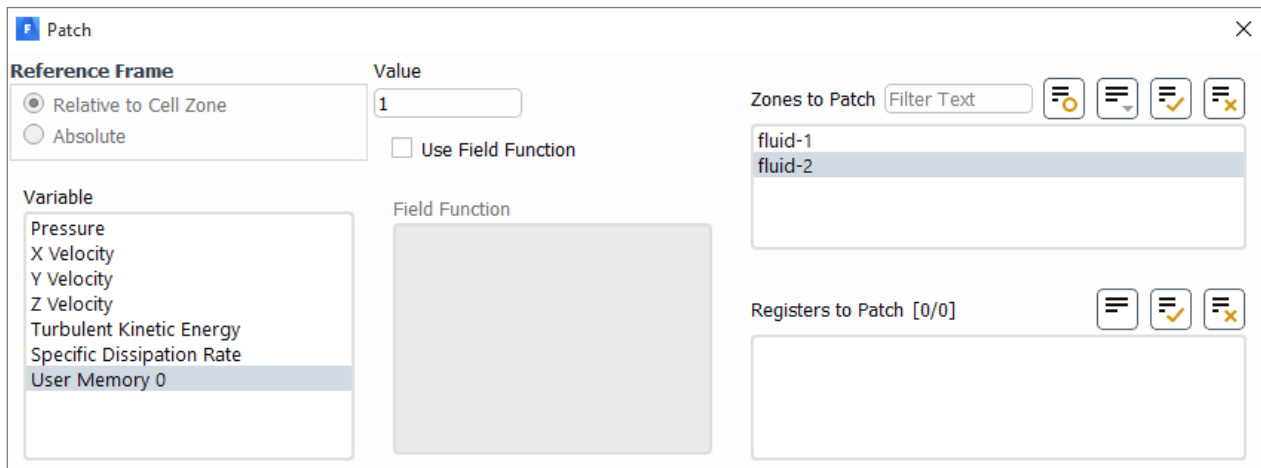
Figure 1: Inclined plane created using the Three point method available in the Plane tool

To clip the plane to only "fluid-2" cell zone, following workaround can be used:

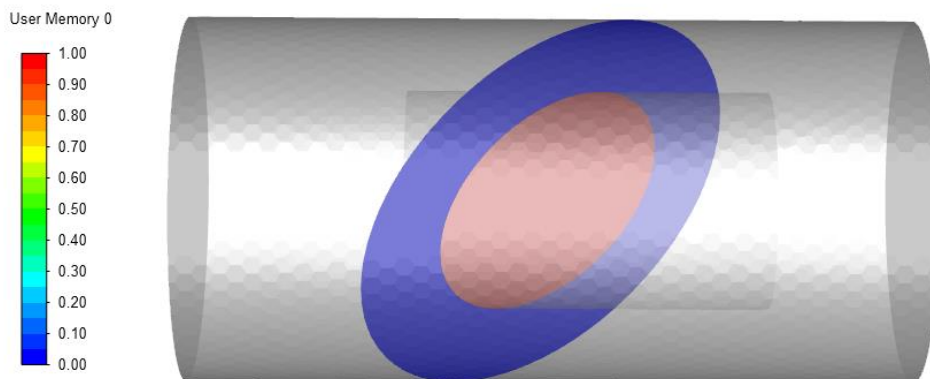
1. Invoke a UDM variable



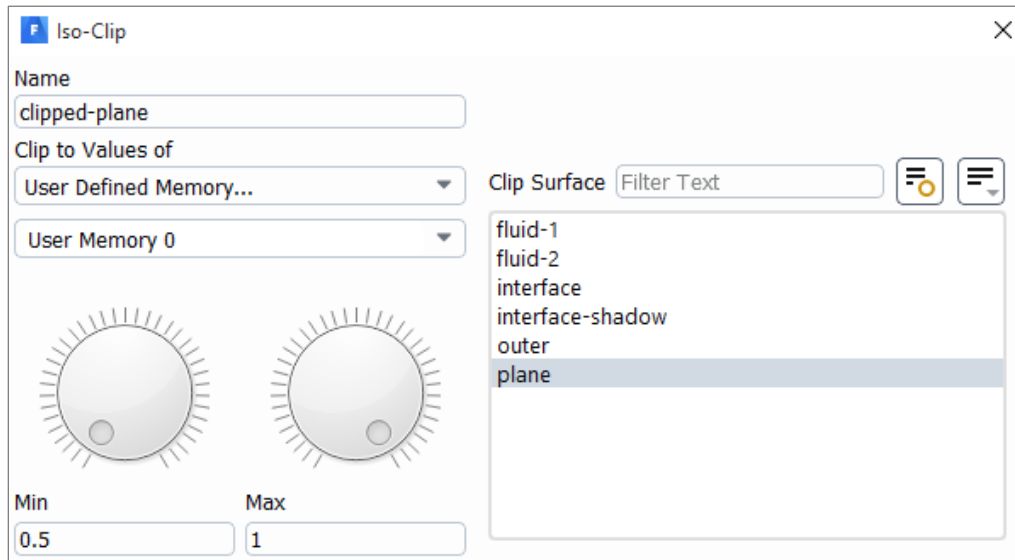
2. Patch the UDM variable to unity only in the cell zones to which the plane is to be bounded



Note: After patching, plotting the contours of UDM variable on the plane created earlier can be used to ascertain if the UDM value of unity represents the desired part of the plane to be clipped.



3. Create an iso-clip using the UDM variable on the plane surface



This gives the desired plane clipped to the selective cell zone “*fluid-2*”.

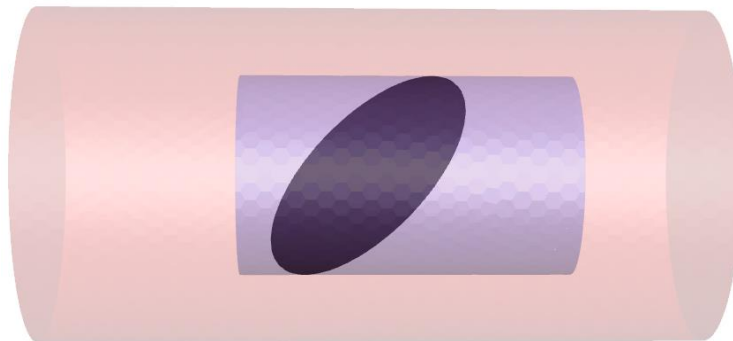


Figure 2: Inclined plane clipped to cell zone “*fluid-2*”

Keywords: clipped plane; plane tool

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