Parallel Simulations for Refined Mesh of Pipe with Weld

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Where is the Weld?
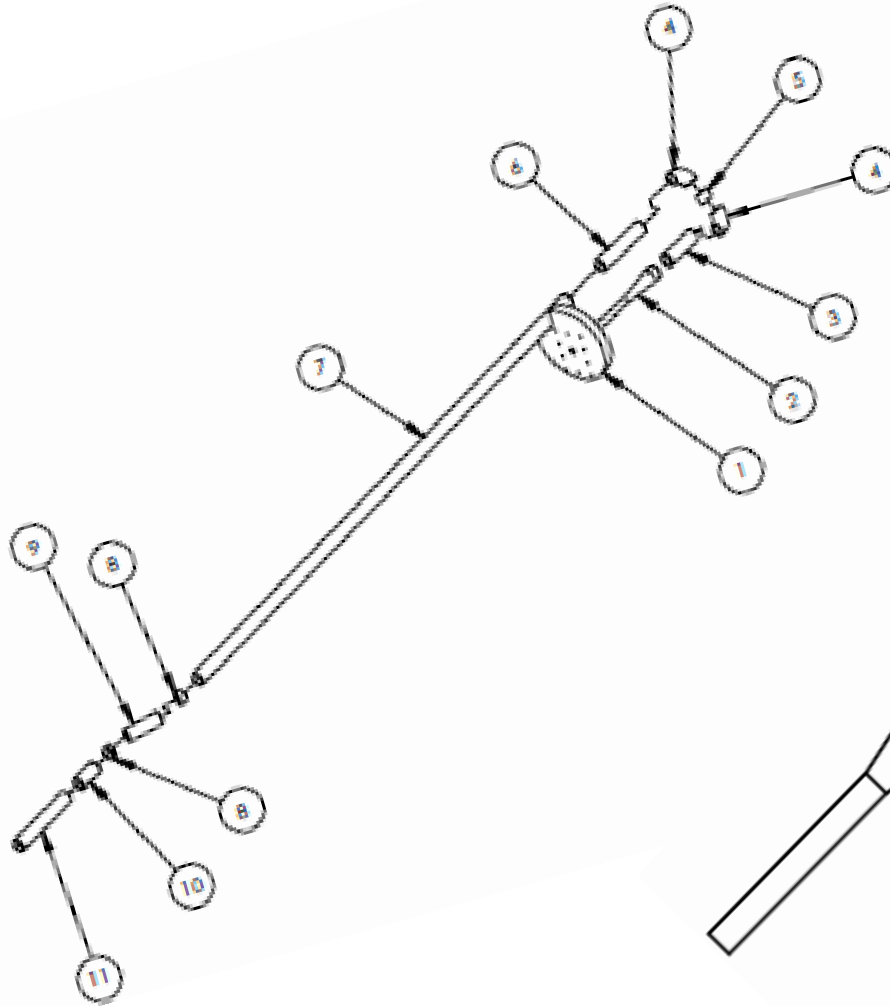

Fig. 1 Hg nozzle assembly
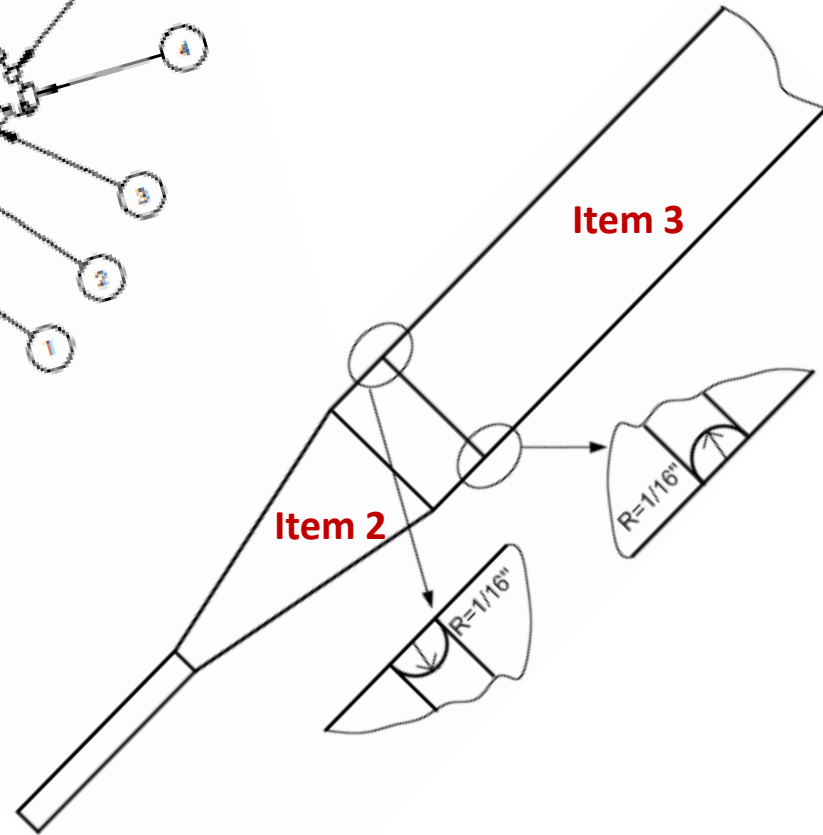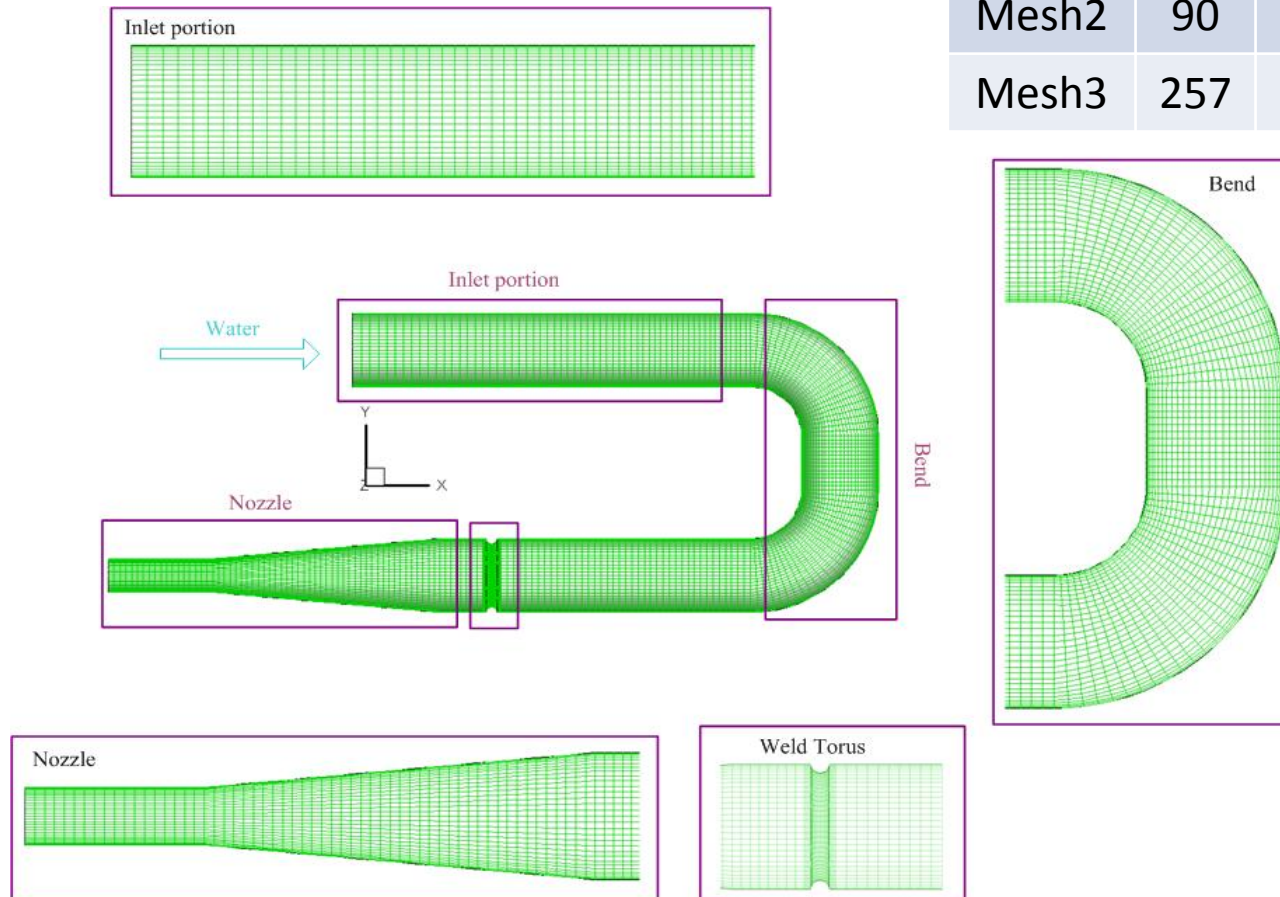

Item 3

Item 2

R=1/16"

R=1/16"

Fig. 2 Semi-circle azimuthal-symmtery Weld

Mesh for the Pipe With Weld

Table 1 Mesh table

	n_r	n_θ	n_z	n_{tot} (million)
Mesh0	65	32	260	0.533
Mesh1	77	40	274	0.833
Mesh2	90	48	294	1.26
Mesh3	257	48	623	7.655

Fig. 3 Mesh map for the 90⁰/90⁰ pipe

Current Problems With Fine Mesh

(a) Time set = 3000

(b) Time set = 6000

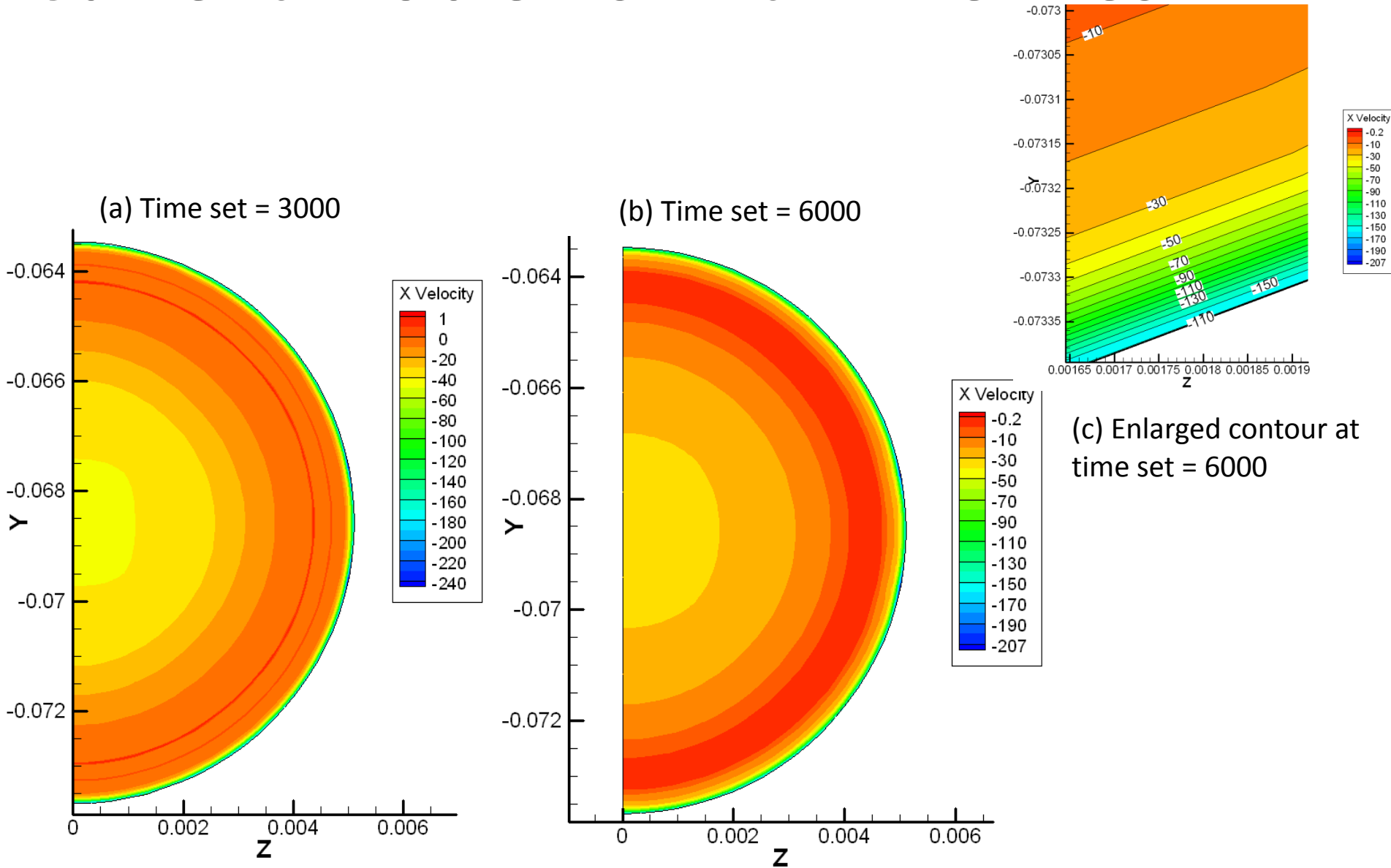(c) Enlarged contour at time set = 6000

Fig. 4 Results of axial velocity at the exit plane through 12 processes computation at Feynman

Solutions

1) Coarser Mesh

	n_r	n_θ	$n_{\tilde{z}}$	n_{tot} (million)
Mesh0	65	32	260	0.533
Mesh1	77	40	274	0.833
Mesh2	90	48	294	1.26
Mesh3	**257**	**48**	**623**	**7.655**

	n_r	n_θ	$n_{\tilde{z}}$	n_{tot} (million)
Mesh0	65	32	260	0.533
Mesh1	77	40	274	0.833
Mesh2	90	48	294	1.26
Mesh3	**147**	**48**	**517**	**3.623**

2) Longer simulation for lower order solver