

















**Fig.4** Velocity U-components at centerline in various Reynolds number for wave-3 from experimental, (a) position 1 and (b) position 2.

**Table 1:** Characteristics of flow for position 1 and position 2 (above the crest of the wave)

Surfaces	Characteristics of flow	Finding		
		Position 1	Position 2	
Flat	Region negative velocities behind the bluff body	2.6D	2.4D	
	Overall bandwidth measured with reference to peak positive and negative velocity	1.54U <sub>in</sub>	1.4U <sub>in</sub>	
	Overall downstream velocities approaching main velocity	Early	Late	
	Fluctuation of velocities with respect to variation of each Reynolds number	Low Reynolds number	Large	Small
		High Reynolds number	Small	Large
Wave-1	Region negative velocities behind the bluff body	3.7D	2.6D	
	Overall bandwidth measured with reference to peak positive and negative velocity	1.71U <sub>in</sub>	1.46U <sub>in</sub>	
	Overall downstream velocities approaching main velocity	Early	Early	
	Fluctuation of velocities with respect to variation of each Reynolds number	Low Reynolds number	Large	Large
		High Reynolds number	Large	Large
Wave-2	Region negative velocities behind the bluff body	1.86D	1.53D	
	Overall bandwidth measured with reference to peak positive and negative velocity	1.5U <sub>in</sub>	0.72U <sub>in</sub>	
	Overall downstream velocities approaching main velocity	Early	Late	
	Fluctuation of velocities with respect to variation of each Reynolds number	Low Reynolds number	Large	Small
		High Reynolds number	Small	Large
Wave-3	Region negative velocities behind the bluff body	2.6D	0.53D	
	Overall bandwidth measured with reference to peak positive and negative velocity	1.5U <sub>in</sub>	0.48U <sub>in</sub>	
	Overall downstream velocities approaching main velocity	Early	Late	
	Fluctuation of velocities with respect to variation of each Reynolds number	Low Reynolds number	Large	Small
		High Reynolds number	Small	Small

**Table 2:** Characteristics of flow for position 3 and position 4 (above the trough of the wave)

Surfaces	Characteristics of flow	Finding		
		Position 3	Position 4	
Wave-1	Region negative velocities behind the bluff body	3.7D	2.5D	
	Overall bandwidth measured with reference to peak positive and negative velocity	1.7U <sub>in</sub>	1.58U <sub>in</sub>	
	Overall downstream velocities approaching main velocity	Early	Late	
	Fluctuation of velocities with respect to variation of each Reynolds number	Low Reynolds number	Small	Small
		High Reynolds number	Small	Small
Wave-2	Region negative velocities behind the bluff body	1.8D	2.2D	
	Overall bandwidth measured with reference to peak positive and negative velocity	1.91U <sub>in</sub>	1.05U <sub>in</sub>	
	Overall downstream velocities approaching main velocity	Early	Late	
	Fluctuation of velocities with respect to variation of each Reynolds number	Low Reynolds number	Large	Small
		High Reynolds number	Small	Small
Wave-3	Region negative velocities behind the bluff body	2.5D	1D	
	Overall bandwidth measured with reference to peak positive and negative velocity	1.46U <sub>in</sub>	0.5U <sub>in</sub>	
	Overall downstream velocities approaching main velocity	Early	Late	
	Fluctuation of velocities with respect to variation of each Reynolds number	Low Reynolds number	Small	Small
		High Reynolds number	Large	Small



