

Predictions of the Resistance and Squat of Doctors' "Baby" Series Monohulls

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Summary

Predictions of resistance and squat of Doctors' "Baby" Series model hulls are compared to measured values.

Notes

The performance of Doctors' Baby series has been reported in several papers by Doctors and his co-workers, (e.g. [1],[2],[3],[4]) and the thesis by Robards [5].

Acknowledgements

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References

- [1] Doctors, Lawrence J., "Hydrodynamics of the flow behind a transom stern", *29th Israel Conference on Mechanical Engineering*, Haifa, Israel, May 12–13, 2003.
- [2] Doctors, Lawrence J., "Influence of the transom-hollow length on wave resistance", *21st Int. Workshop on Water Waves and Floating Bodies*, Loughborough, England, April 2–5, 2006.
- [3] Doctors, Lawrence J. and Beck, Robert F., "The separation of the flow past a transom stern", *1st Int. Conf. on Marine Research and transportation (ICMRT'05)*, Ischia, Italy, Sept. 19–21, 2005.
- [4] Doctors, Lawrence J., Macfarlane, Gregor J. and Young, Richard, "A study of transom-stern ventilation", *Int. Shipbuilding Progress*, Vol. 54, No. 2–3, 2007.
- [5] Robards, Simon William, "The hydrodynamics of high-speed transom-stern vessels", *M. Engineering thesis*, The University of New South Wales, Nov. 2008.

	L (m)	L/B	B/T	C_{∇}	C_B	C_M	C_P	C_{VP}	C_{WP}	S/L^2	B_T/B	T_T/T	C_{AT}
a	1.600	8.00	2.000	5.27	0.877	0.989	0.886	0.986	0.889	0.233	1.000	1.000	0.989
b			2.380	5.58	0.874	0.987	0.886	0.983	0.889	0.213	1.000	1.000	0.987
c			2.830	5.92	0.871	0.984	0.885	0.980	0.889	0.196	1.000	1.000	0.984
d			3.360	6.28	0.868	0.981	0.885	0.977	0.889	0.182	1.000	1.000	0.981
e			4.000	6.67	0.864	0.978	0.884	0.972	0.889	0.170	1.000	1.000	0.978

Table 1: Principal particulars of Doctors' Baby series model hulls.

	x_B/L	z_B/T	x_F/L	$1000I_L/L^4$	$1000I_T/L^4$	$\overline{\text{GM}}_{\text{L0}}/L$	$\overline{\text{GM}}_{\text{T0}}/B$
a	0.0522	-0.496	0.052	7.95	0.133	1.13	-0.092
b	0.0523	-0.496	0.052	7.95	0.133	1.36	-0.023
c	0.0523	-0.495	0.052	7.95	0.133	1.63	0.047
d	0.0523	-0.497	0.052	7.95	0.133	1.95	0.116
e	0.0524	-0.493	0.052	7.95	0.133	2.34	0.193

Table 2: Principal hydrostatic particulars of Doctors' Baby series model hulls.

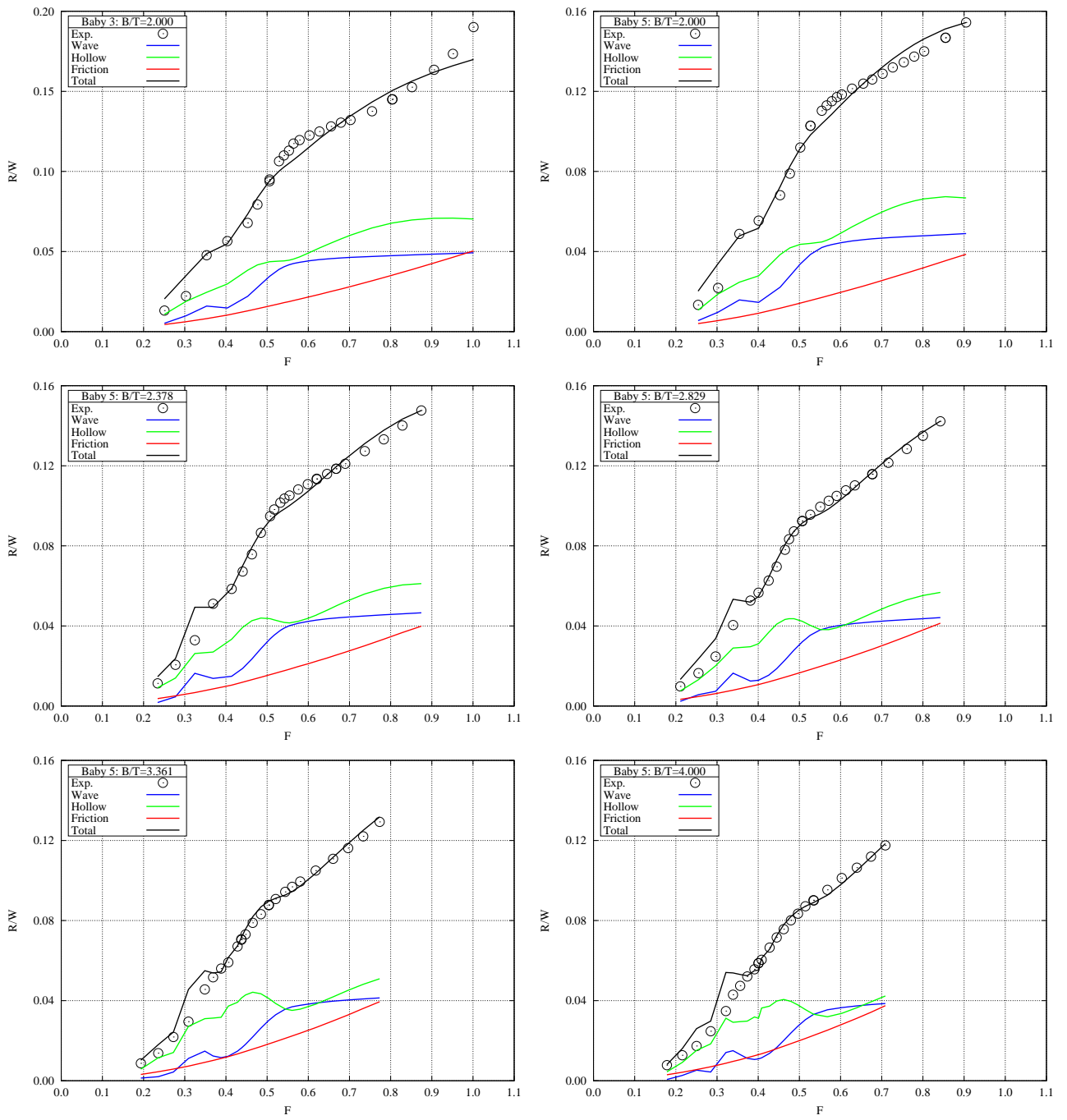


Figure 1: Specific resistance components of Doctors' Baby model monohulls.

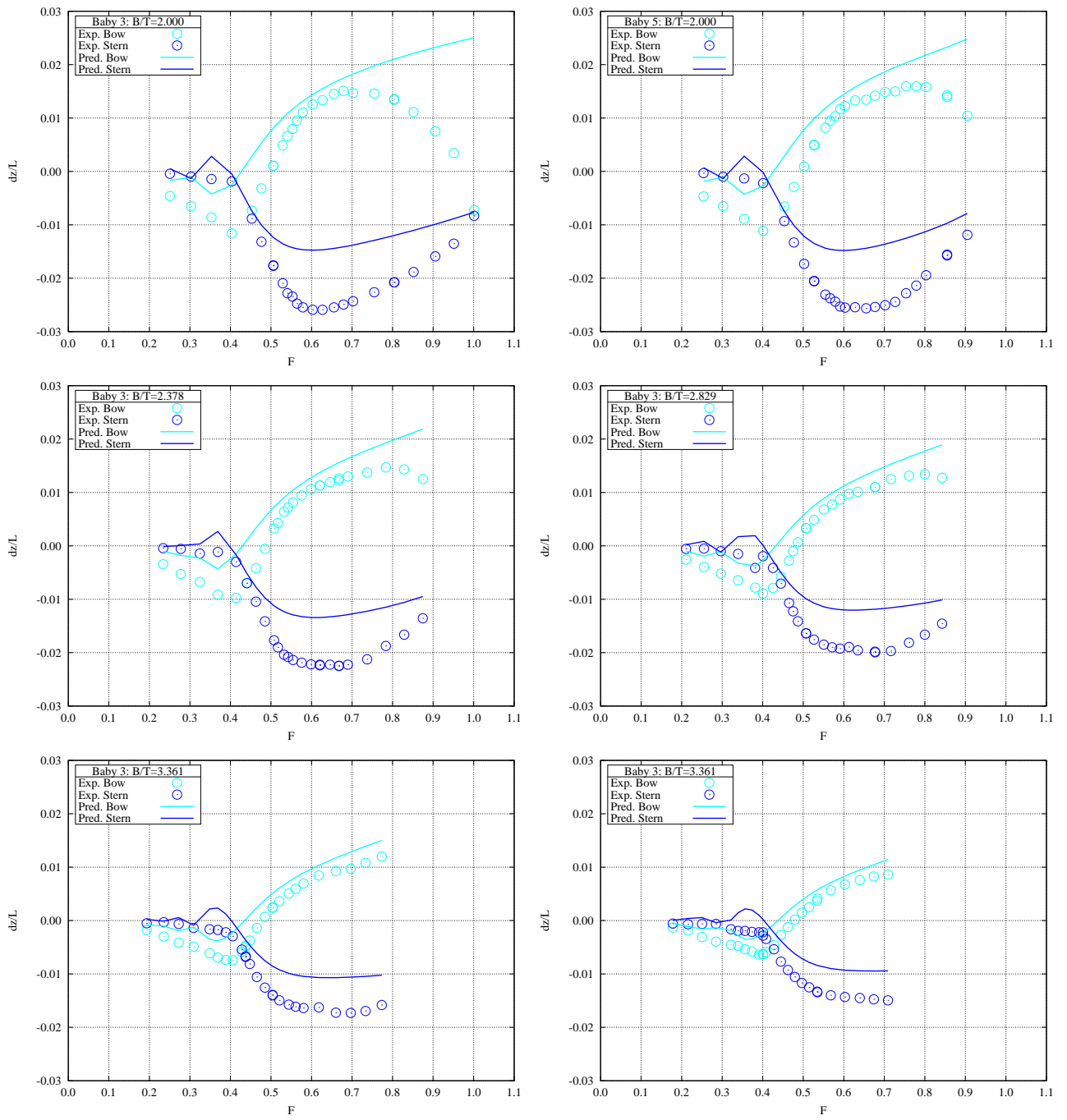


Figure 2: Location of the bow and stern of Doctors' Baby model monohulls.