

MATHEMATISCH CENTRUM
2e BOERHAAVESTRAAT 49
AMSTERDAM
REKENAFDELING

Computation of the thrustcoefficient C_s for a
three bladed propeller in a homogeneous flow

by

The Staff of the Computation Department

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1. On behalf of the Netherlands Ship Model Basin the thrust-constant Cs_0 defined by

$$Cs_0 = 8 \int_0^1 \frac{1 - \eta_{pi}}{\eta_{pi}^2} \left[\frac{\kappa(\lambda_1, x)x^3}{x^2 + \lambda_1^2} - \frac{1 - \eta_{pi}}{\eta_{pi}^2} \lambda_1^2 \frac{\kappa(\lambda_1, x)x^3}{(x^2 + \lambda_1^2)^2} \right] dx$$

was computed as a function of λ_1 and η_{pi} .

2. Results:

$1/\lambda_1 \rightarrow$	1	2.5	4	5	10
η_{pi}					
0.5	.6882	2.930	4.565	5.263	6.763
0.6	.4223	1.686	2.582	2.961	3.773
0.7	.2547	.9615	1.448	1.652	2.088
0.75	.1929	.7096	1.060	1.207	1.519
0.8	.1412	.5072	.7518	.8536	1.070
0.85	.09757	.3424	.5037	.5706	.7123
0.9	.06024	.2069	.3021	.3414	.4245
0.92	.04680	.1594	.2320	.2620	.3252
0.94	.03411	.1152	.1673	.1887	.2338
0.95	.02803	.09429	.1367	.1541	.1909
0.96	.02211	.07410	.1073	.1209	.1496
0.97	.01636	.05460	.07893	.08891	.1099
0.98	.01076	.03577	.05164	.05814	.07183
0.99	.005308	.01758	.02534	.02852	.03521