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Regression of Weight on Length of Greenland halibut (*Reinhardtius hippoglossoides*) in the Canadian Northwest Atlantic

by

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INTRODUCTION

Recent TAC's of Greenland halibut in the Northwest Atlantic have reached a combined value of 100,000 MT. In order to perform proper analytical assessments for Greenland halibut as with most species the relationship between length and weight is a very necessary and important parameter. Because of the importance of the Greenland halibut fishery and its assessment this parameter has now been derived for most areas under management regimes and presented in this document.

MATERIALS AND METHODS

Random samples of Greenland halibut were collected during random-stratified groundfish surveys of Canadian (Newfoundland) research vessels. Samples were collected in all divisions of NAFO Subarea 2, divisions 3K and 3P as well as in the northern Gulf of St. Lawrence. Details of sampling are presented in Table 1. Fish collected were measured, then frozen individually in plastic bags to prevent dehydration and brought back to the laboratory for detailed examination. Upon thawing they were measured again from the tip of the snout to the fork of the tail and weighed to the nearest gram for both whole and gutted weight.

Least squares regression equations were calculated for each NAFO division separately and then the whole area combined for both round and gutted weight. The regression equations were derived using the logarathmic transformation (base 10) where y=log weight (kg) and X=log length (cm).

RESULTS

The regression analyses performed are summarized in Table 2. For each analysis a plot of the empirical data is shown as well as a plot of the

transformed data with regression line and 95% confidence limits. Plots for Div. 2G are shown in Fig. 1-4, Div. 2H in Fig. 5-8, Div. 2J in Fig. 9-12, Div. 3K in Fig. 13-16, Div. 3P in Fig. 17-20 and the northern Gulf of St. Lawrence Fig. 21-24.

Table 1. Summary of samples collected for length-weight relationships of Greenland halibut in the Northwest Atlantic.

Ship	NAFO division	Dates collected	No. sampled
A. T. CAMERON	3P	March 1981	57
GADUS ATLANTICA	2J	November-December, 1980	125
"	3K	"	101
"	Gulf	January-February, 1981	121
"	2J	March 1981	55
"	3K	"	25
"	2H	July 1981	98
"	2J	"	79
"	3K	"	54
"	2G	October-November 1981	133
"	2H	"	135
"	2J	"	20
"	2J	November 1981	168
"	3K	December 1981	94
"	2J	October-November, 1982	139
"	3K	November-December, 1982	125

Table 2. Summary of regression analyses of log length vs. log weight (base 10) for Greenland halibut in the Northwest Atlantic.

Weight type	Division	Int.	Slope	R^2	F. value	p>F	Untransformed equation (kg)
Round	2G	-5.4981	3.2559	0.99	9341.9	0.0001	$W = 0.00000318\ L^{3.2559}$
	2H	-5.6408	3.3382	0.99	25227.2	0.0001	$W = 0.00000229\ L^{3.3382}$
	2J	-5.6624	3.3471	0.99	52692.1	0.0001	$W = 0.00000218\ L^{3.3471}$
	3K	-5.6726	3.3494	0.94	6634.0	0.0001	$W = 0.00000213\ L^{3.3494}$
	3P	-5.3222	3.1531	0.97	1686.5	0.0001	$W = 0.00000476\ L^{3.1531}$
	Gulf	-5.0971	3.0206	0.97	3777.4	0.0001	$W = 0.00000800\ L^{3.0206}$
	All areas combined	-5.6300	3.3285	0.98	64663.8	0.0001	$W = 0.00000234\ L^{3.3285}$
Gutted	2G	-5.5128	3.2455	0.99	11375.7	0.0001	$W = 0.00000307\ L^{3.2455}$
	2H	-5.6598	3.3255	0.99	31322.3	0.0001	$W = 0.00000219\ L^{3.3255}$
	2J	-5.6559	3.3233	0.99	62840.1	0.0001	$W = 0.00000221\ L^{3.3233}$
	3K	-5.6487	3.3160	0.95	6838.5	0.0001	$W = 0.00000225\ L^{3.3160}$
	3P	-5.3413	3.1470	0.97	1803.4	0.0001	$W = 0.00000456\ L^{3.1470}$
	Gulf	-5.1593	3.0403	0.97	3800.0	0.0001	$W = 0.00000693\ L^{3.0403}$
	All areas combined	-5.6238	3.3051	0.98	70192.8	0.0001	$W = 0.00000238\ L^{3.3051}$

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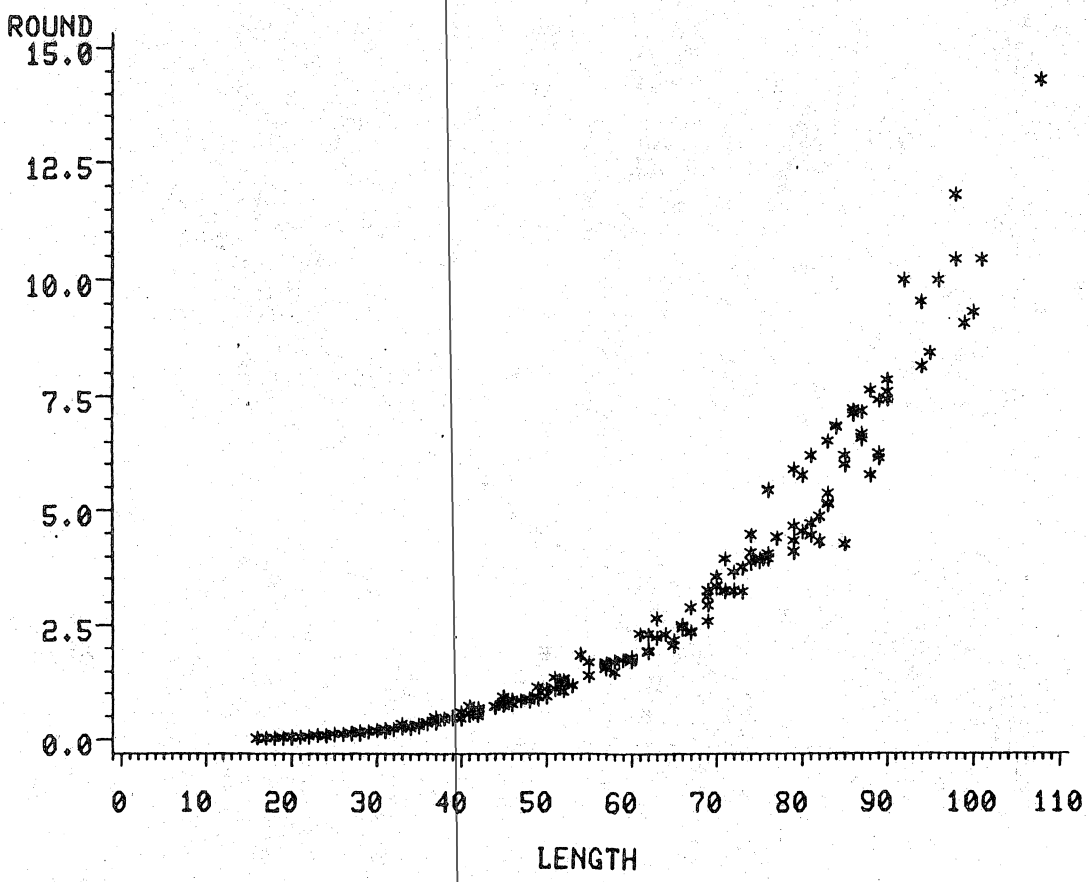
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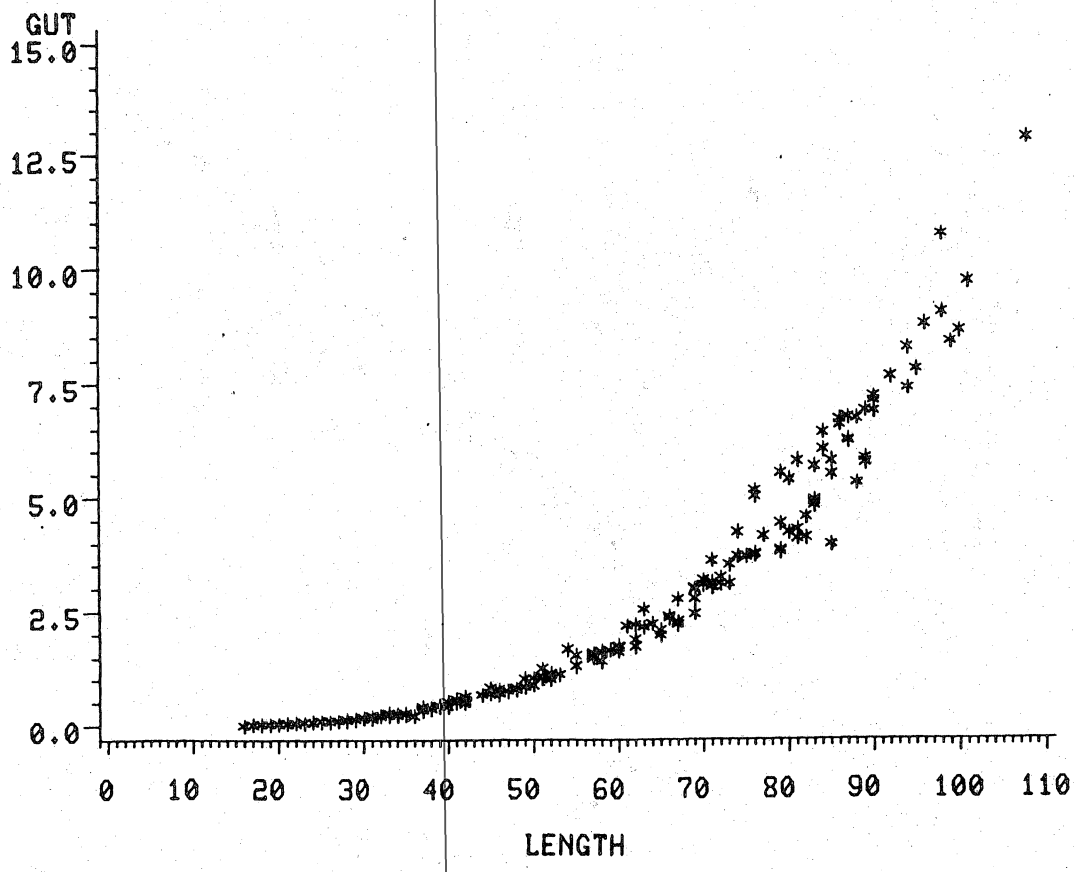
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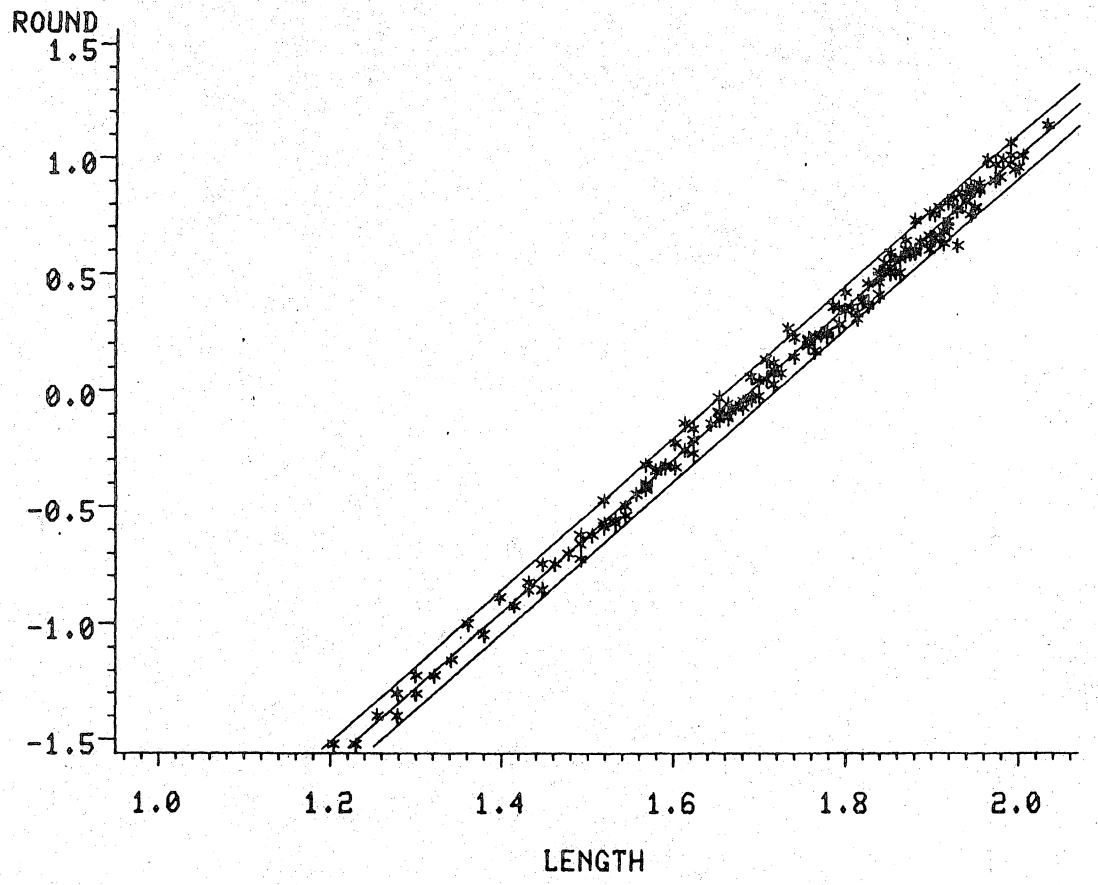
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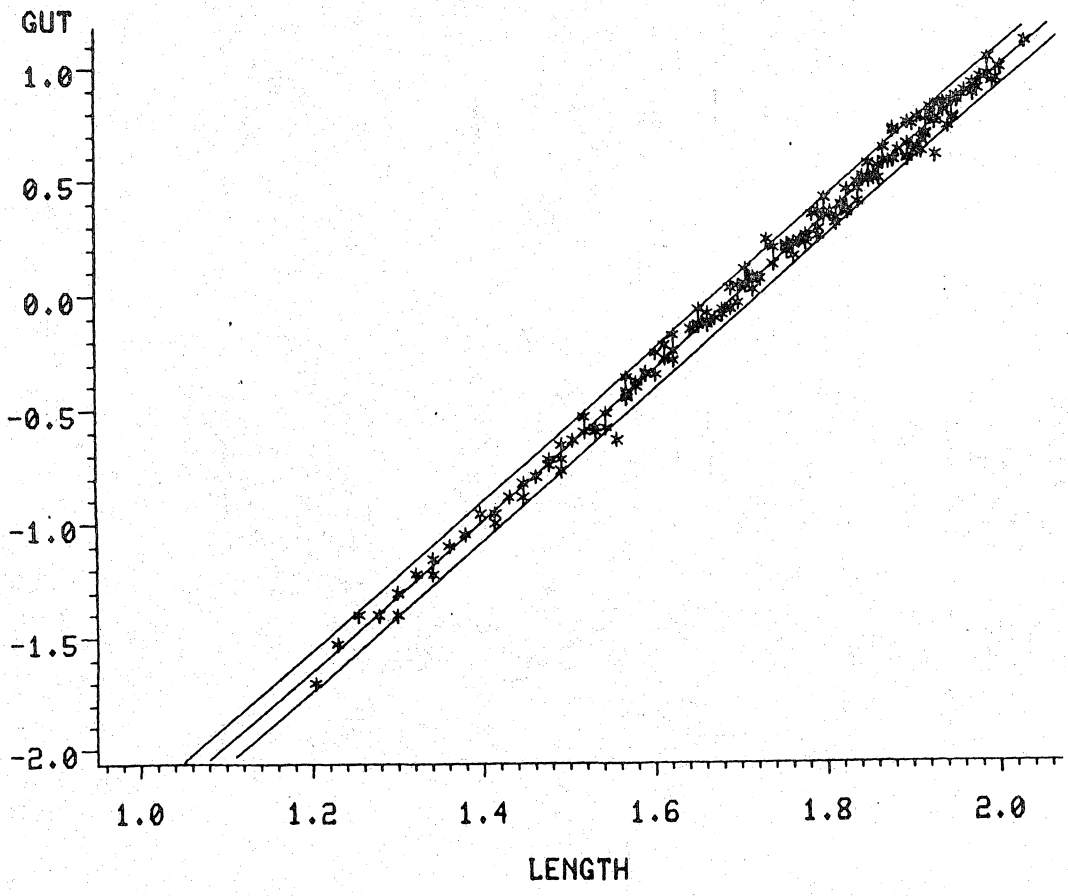
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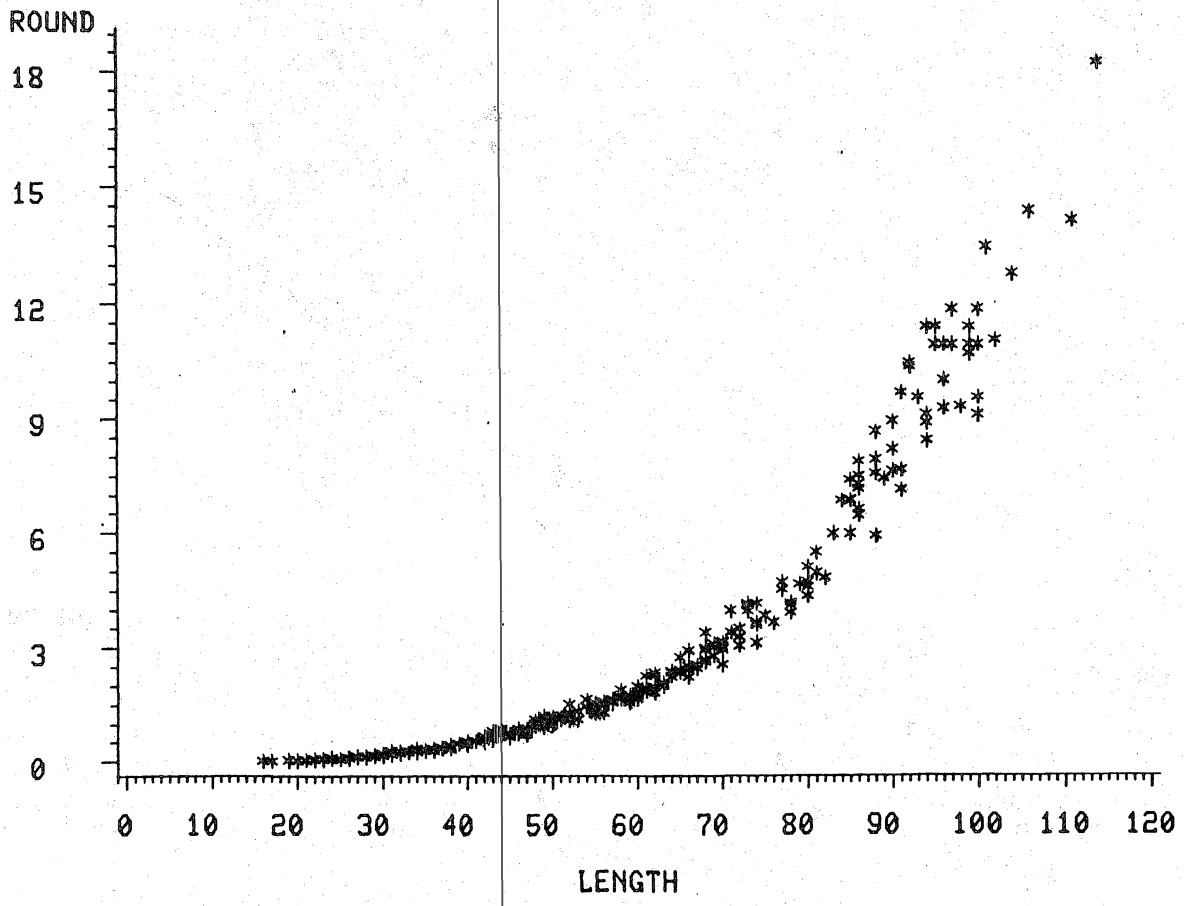
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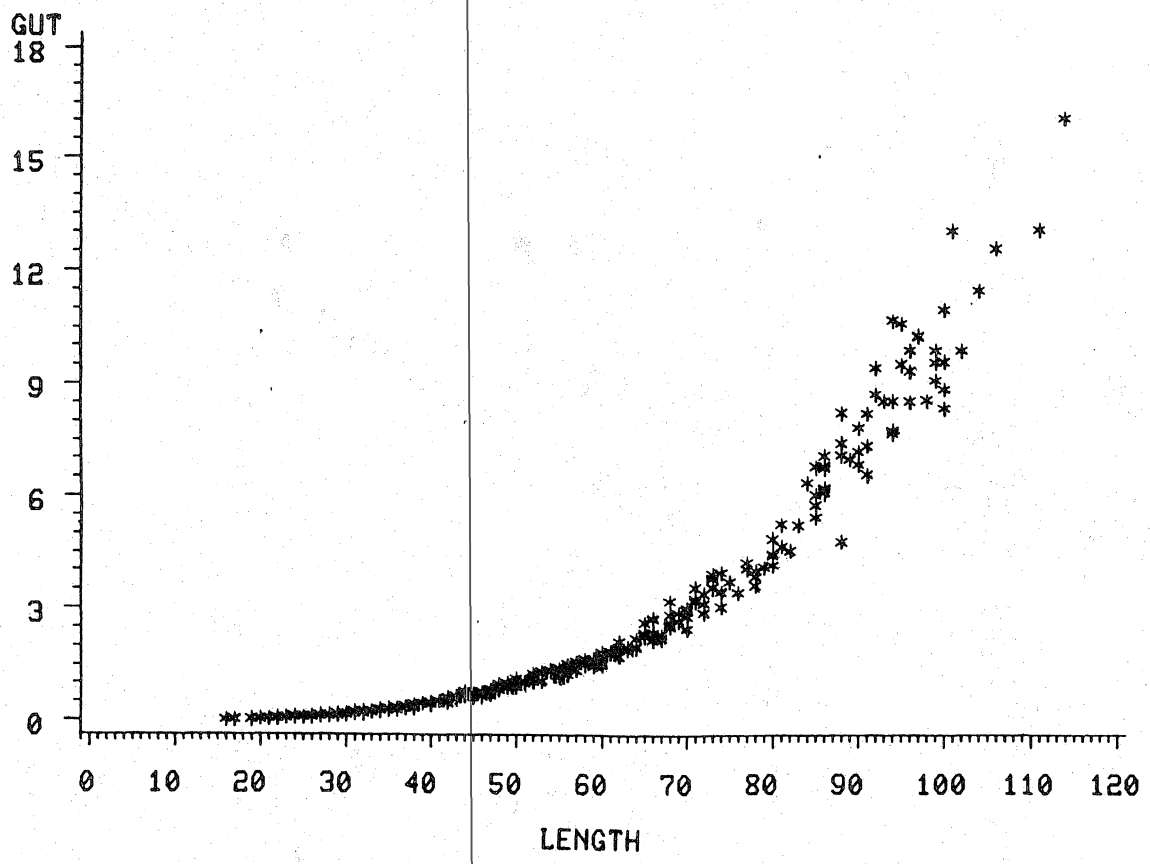
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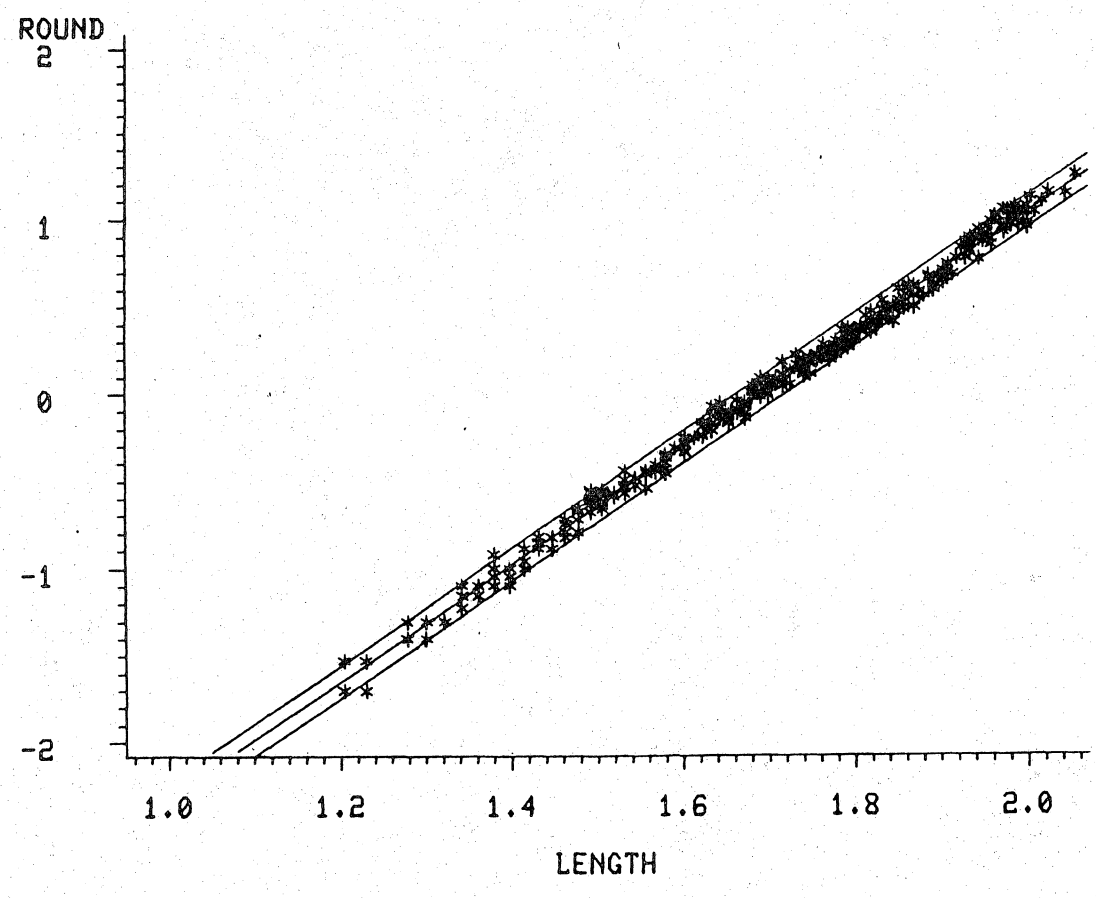
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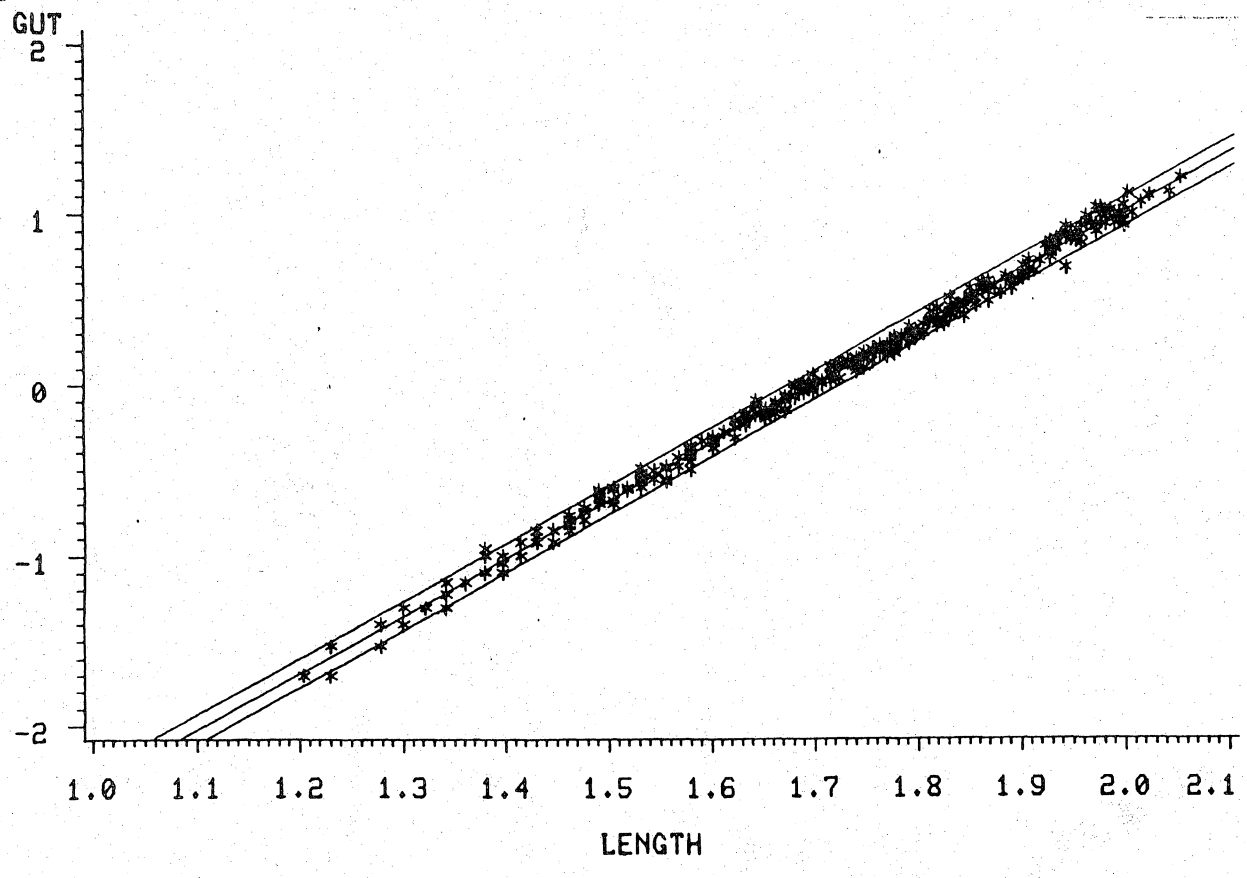
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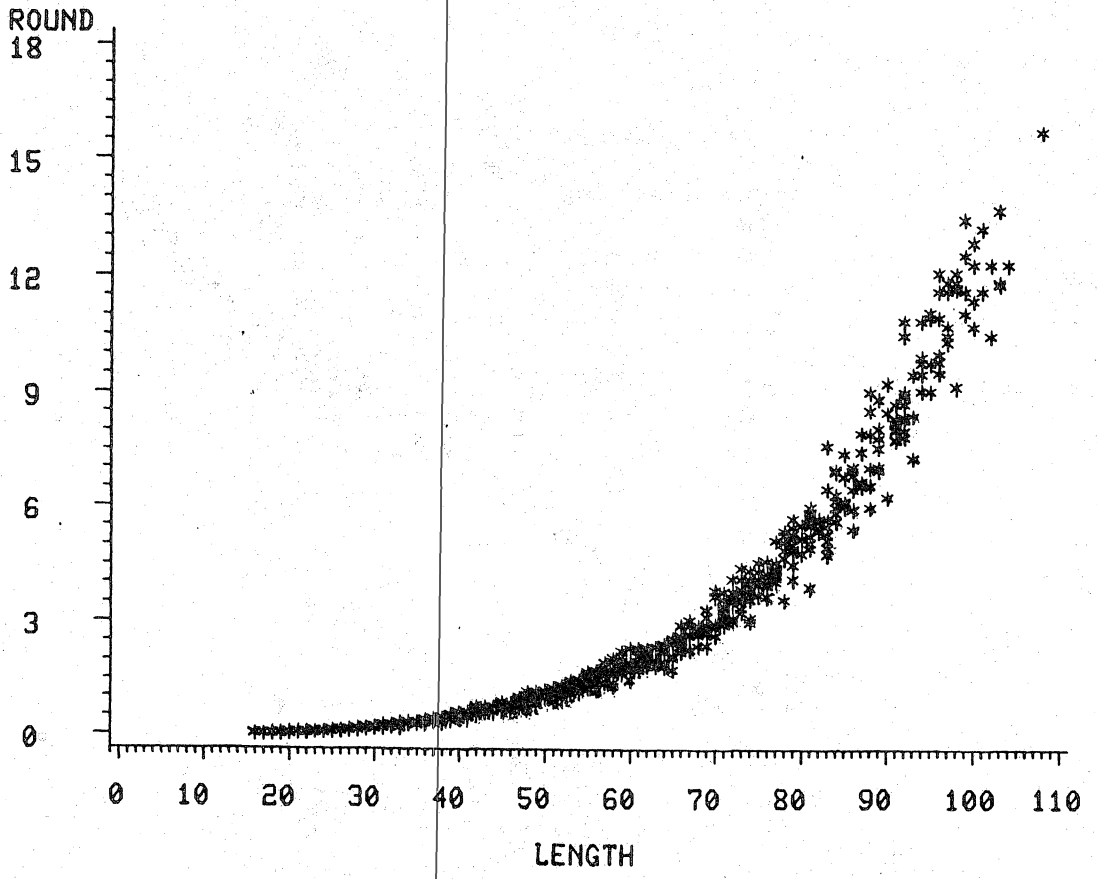
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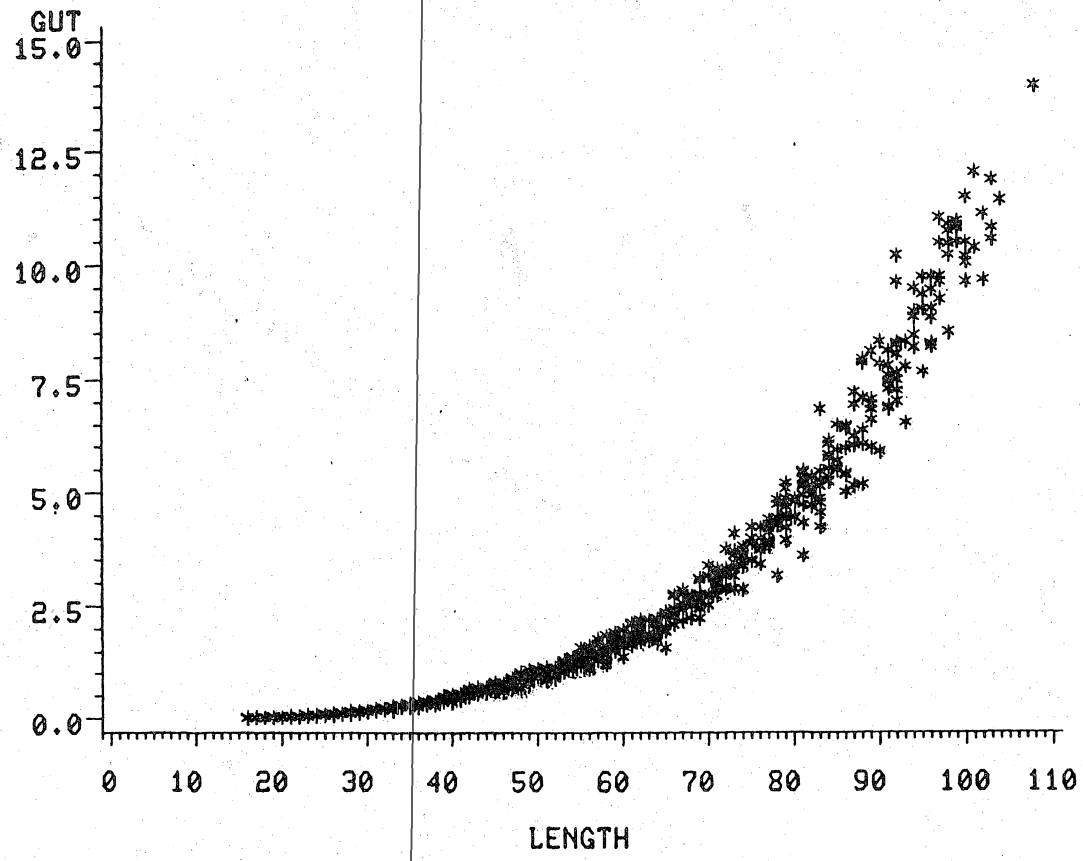
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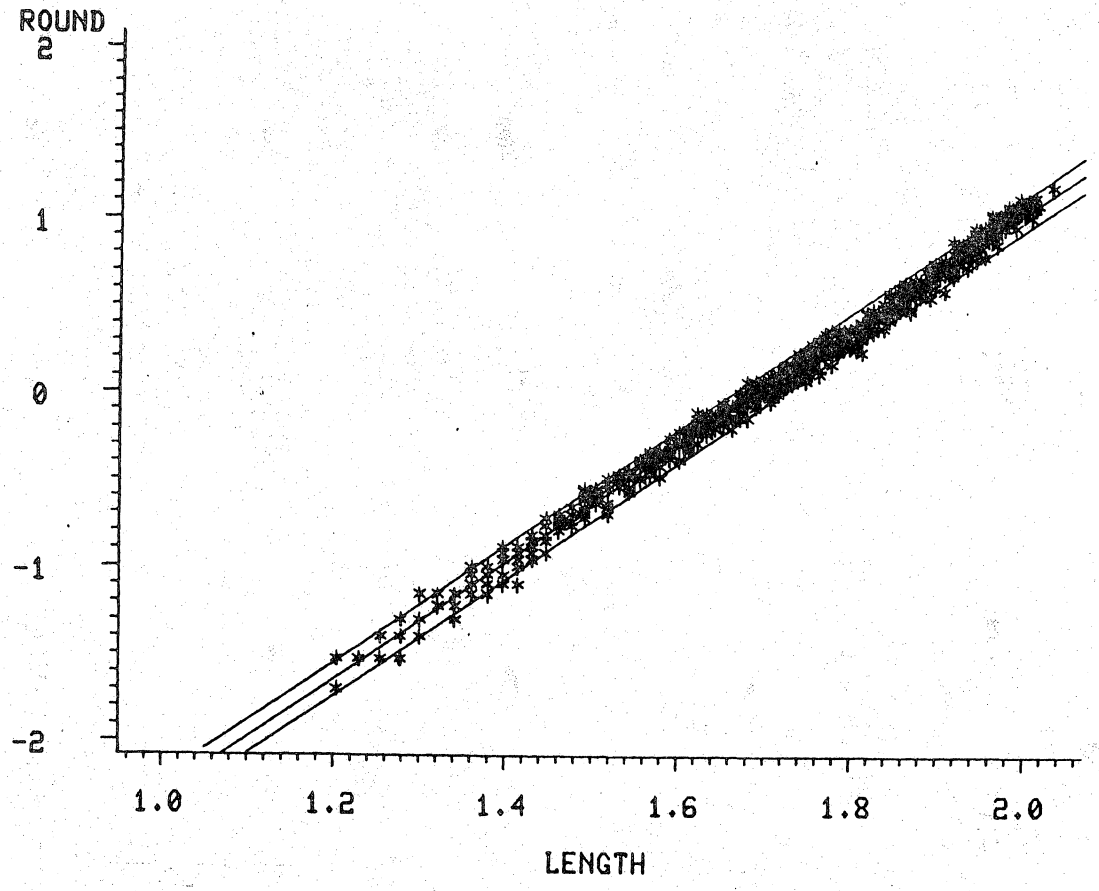
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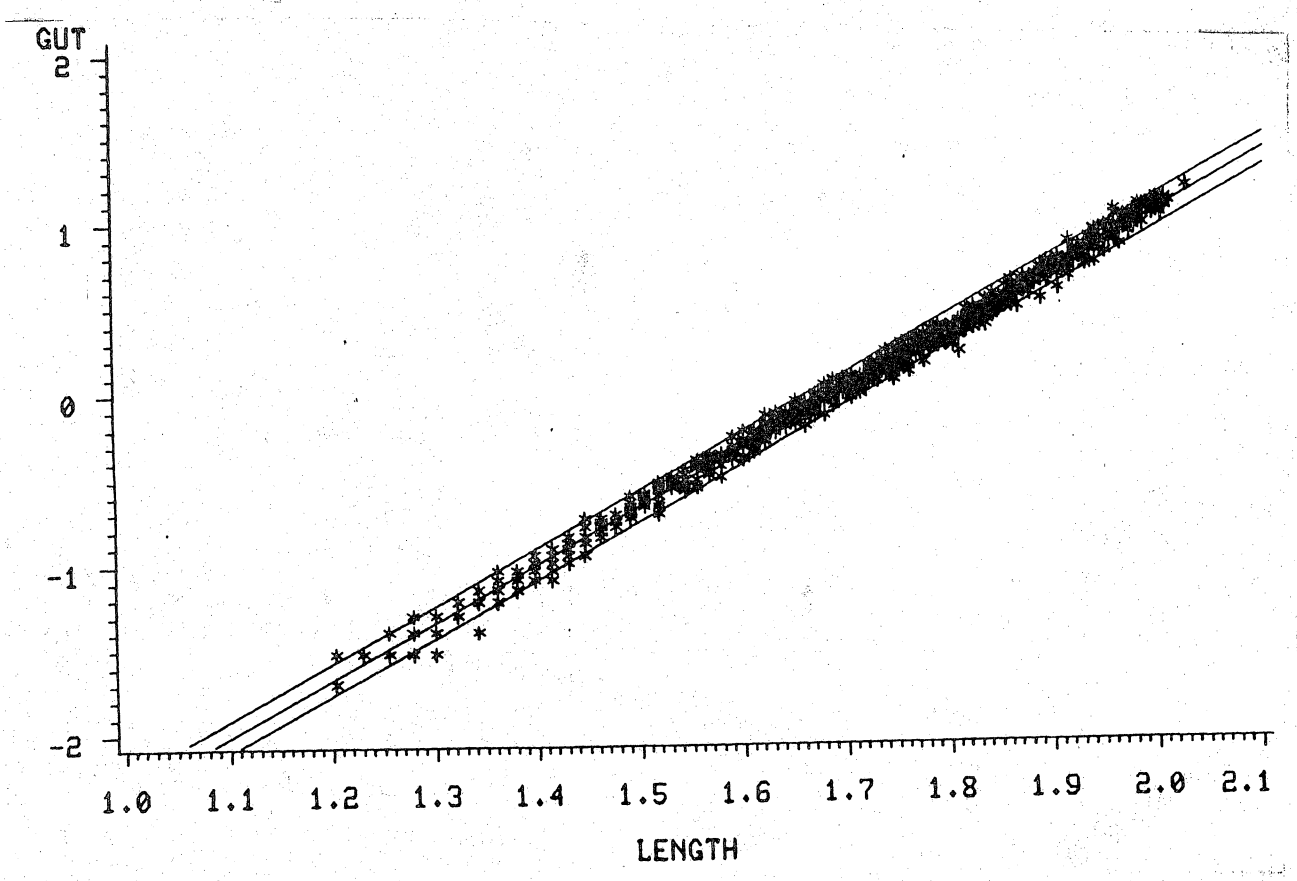
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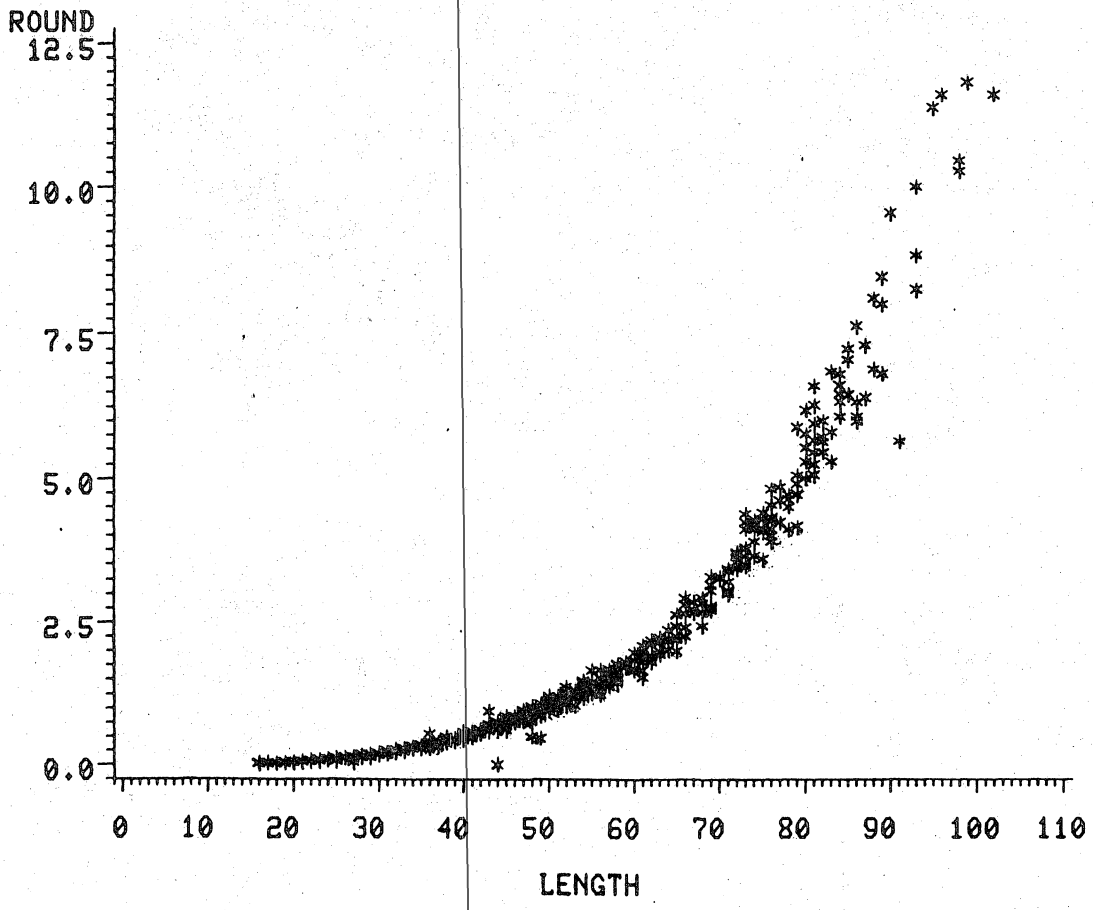
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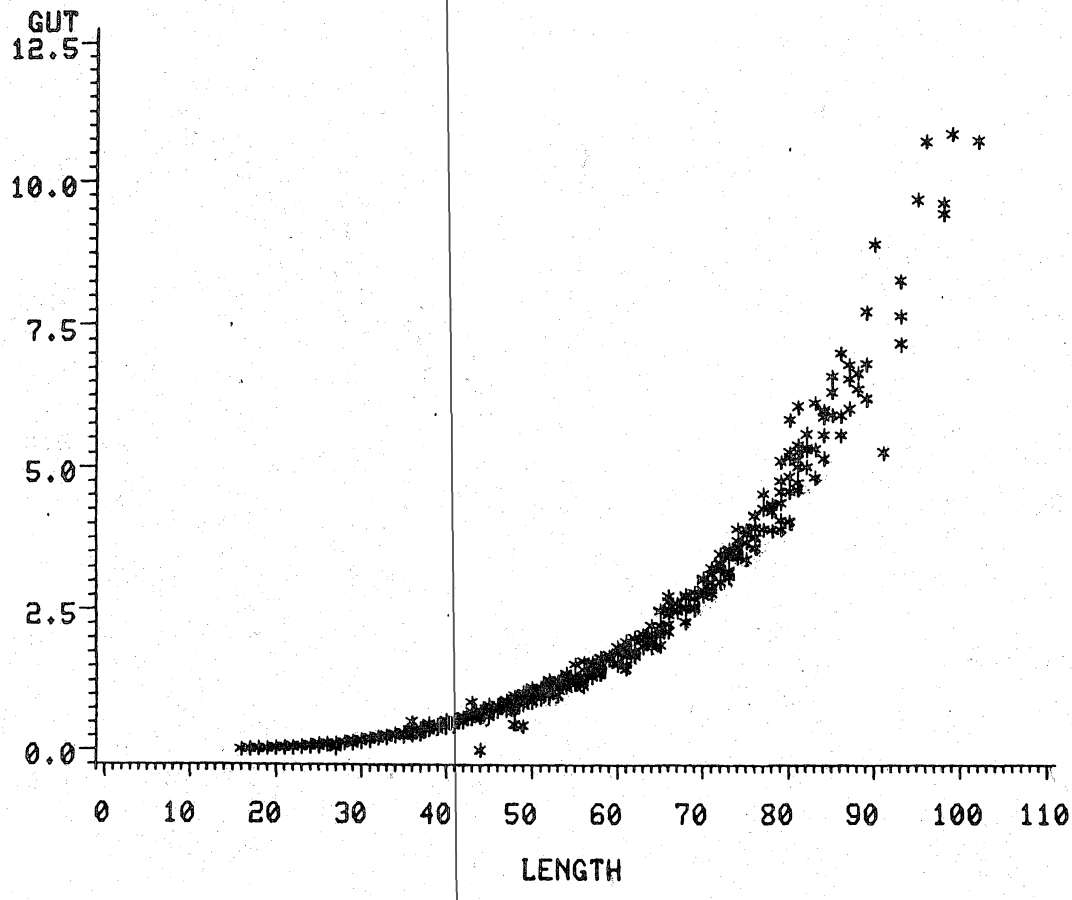
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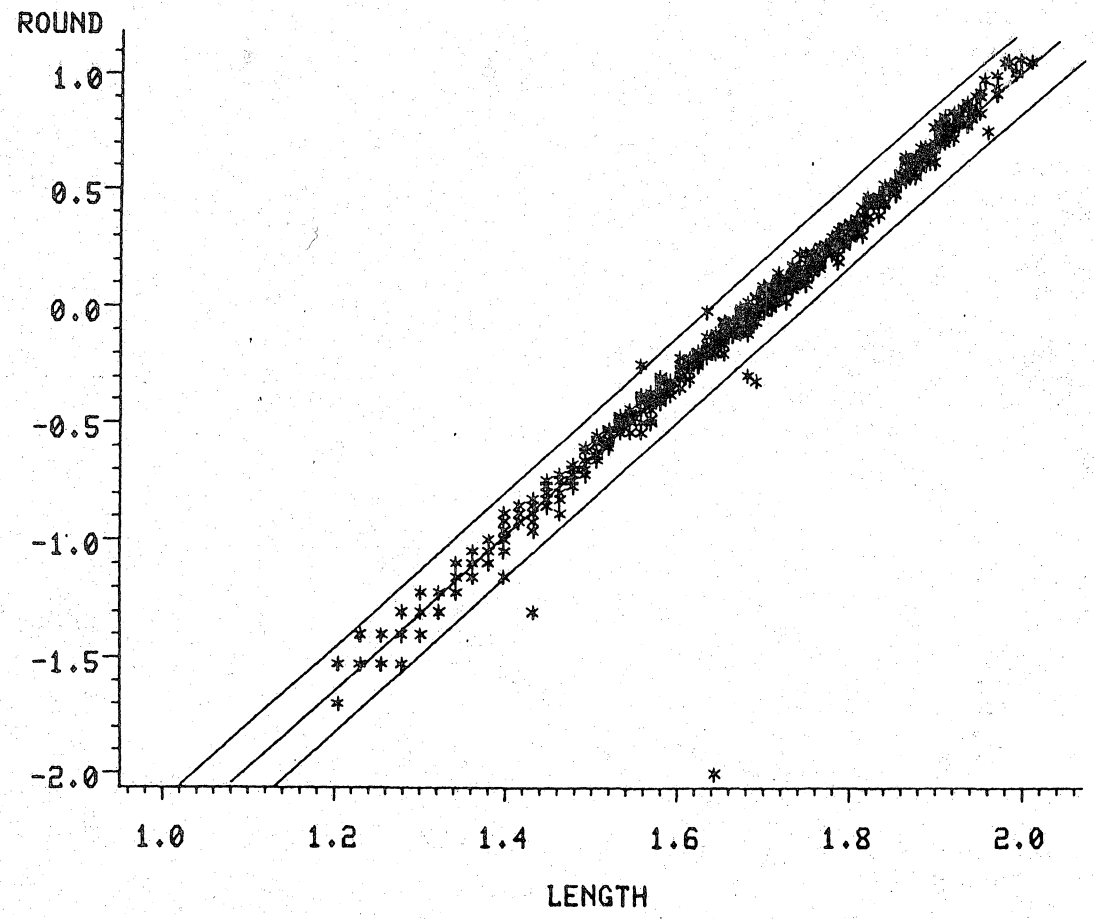
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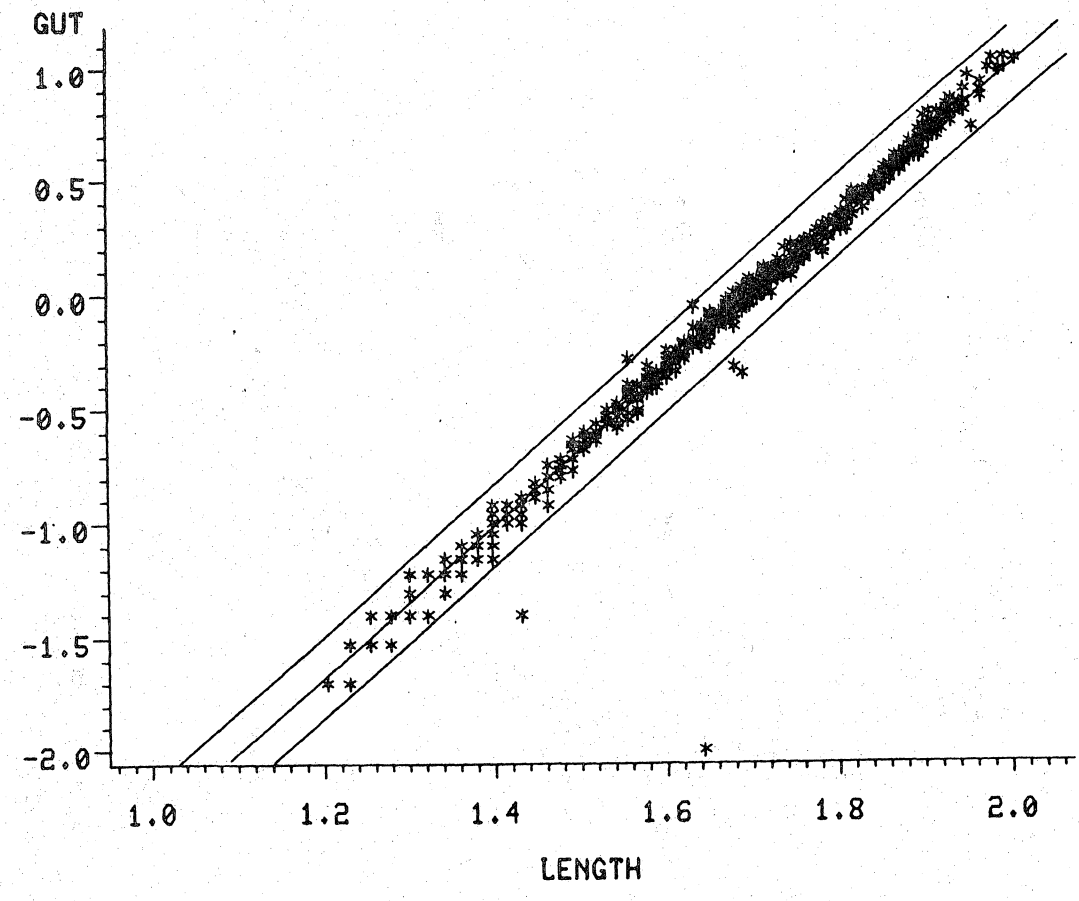
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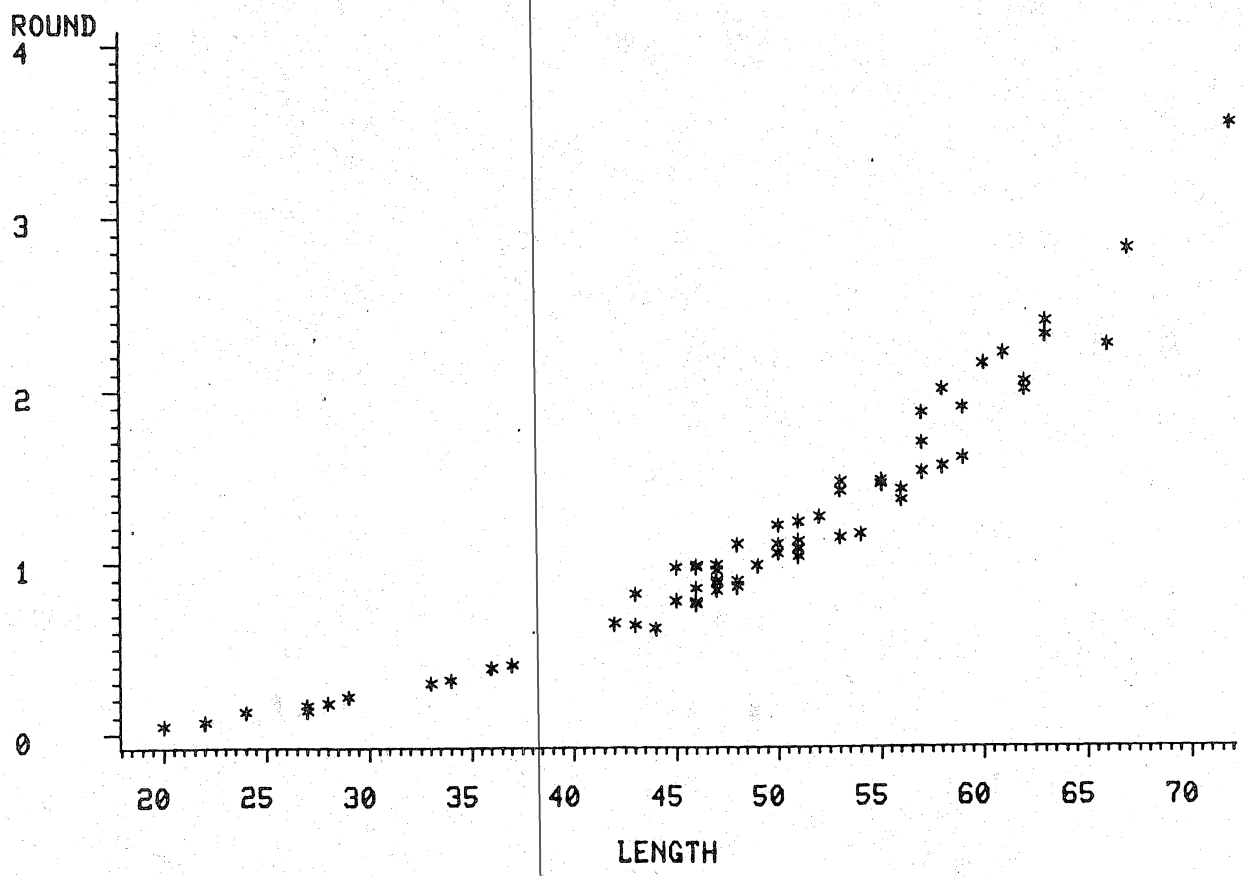
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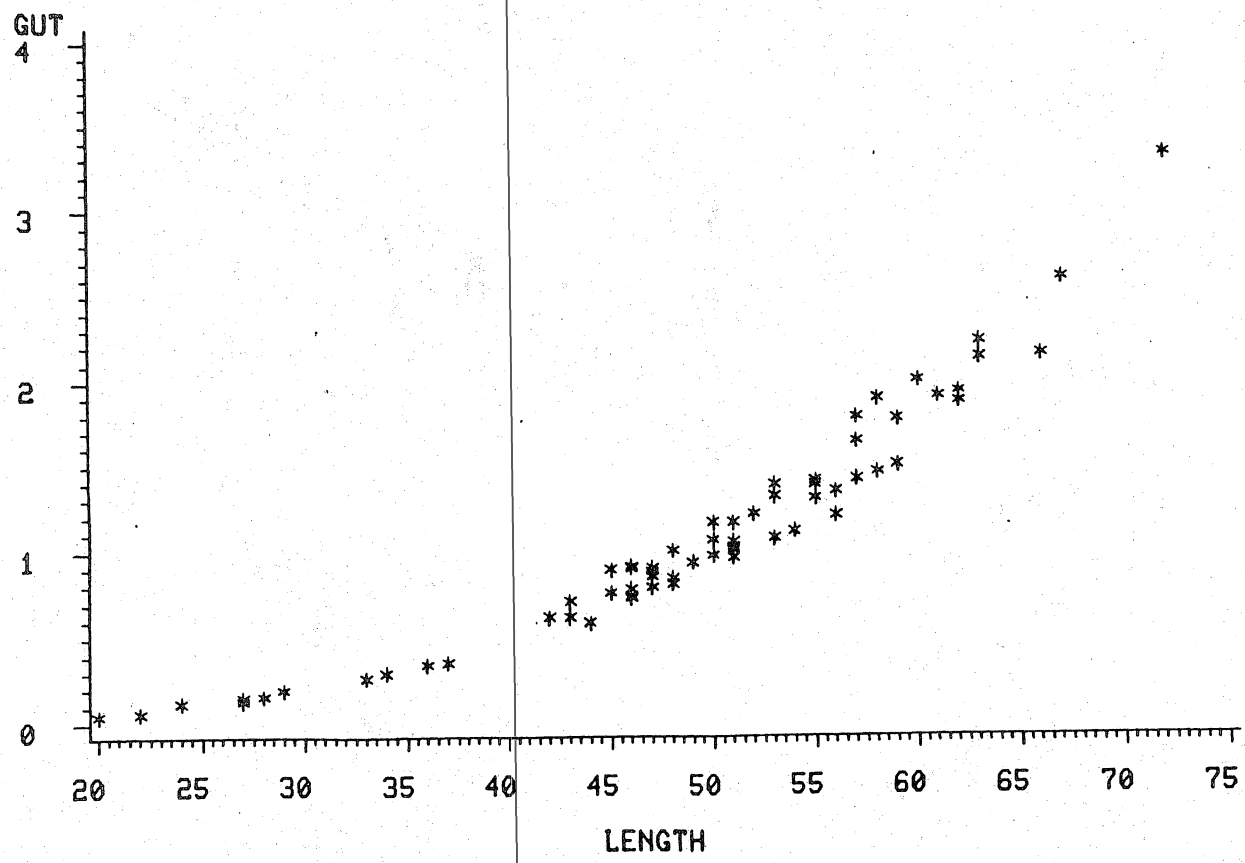
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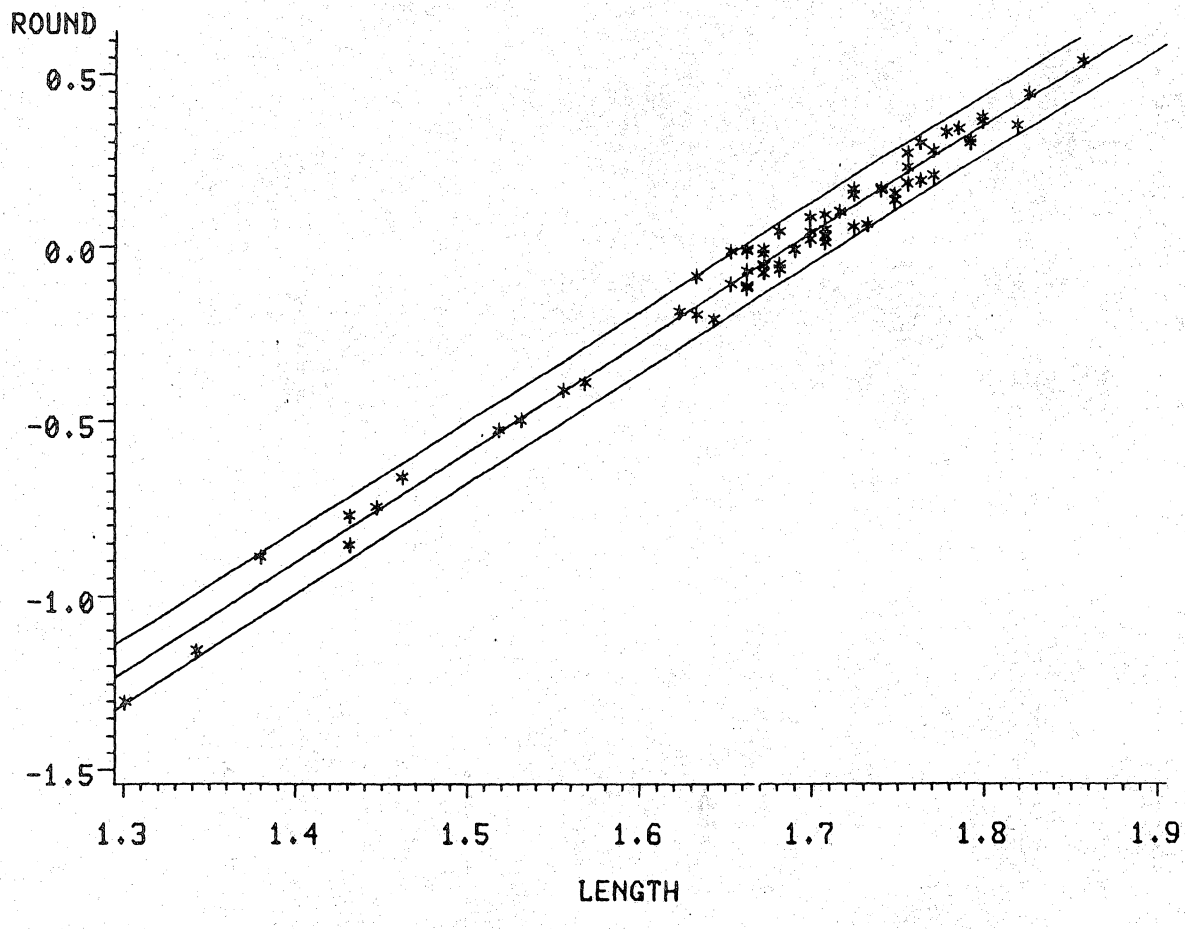
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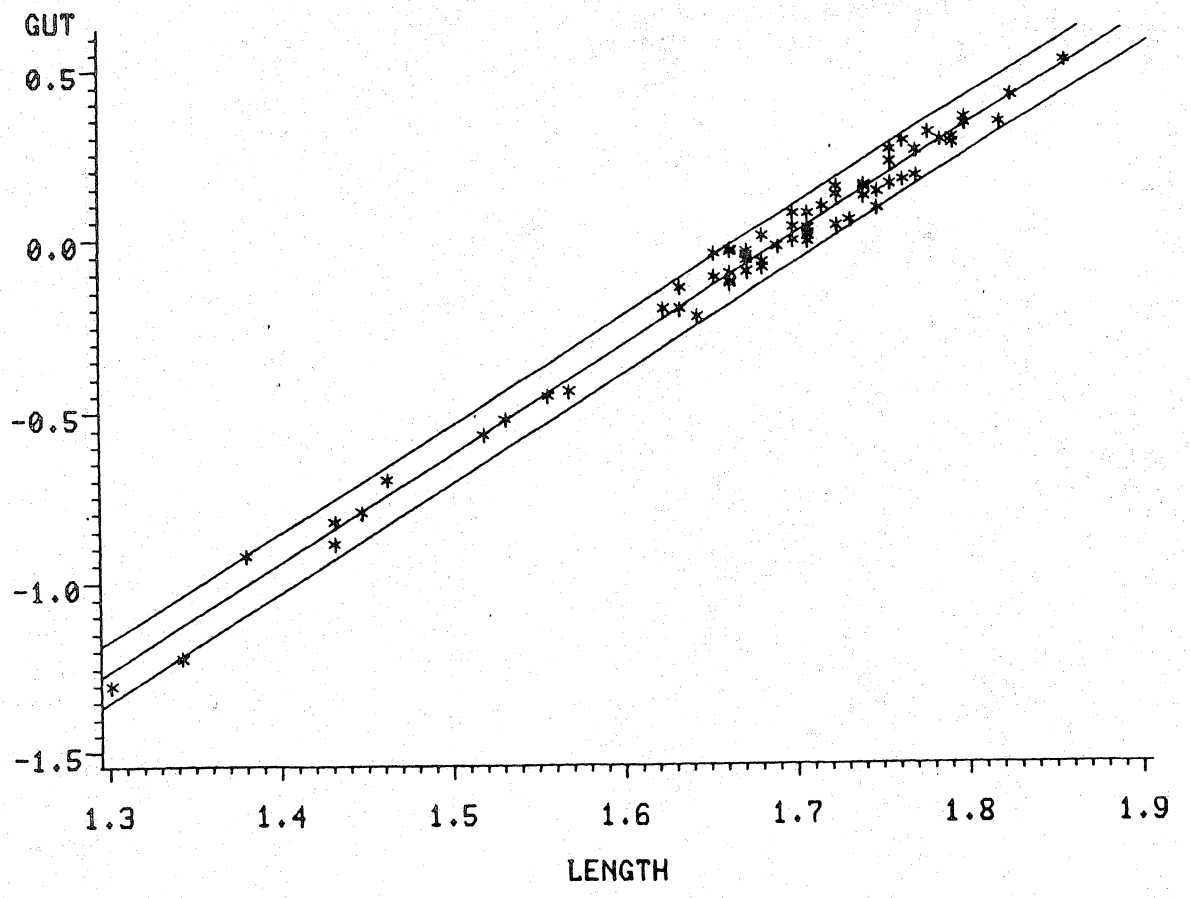
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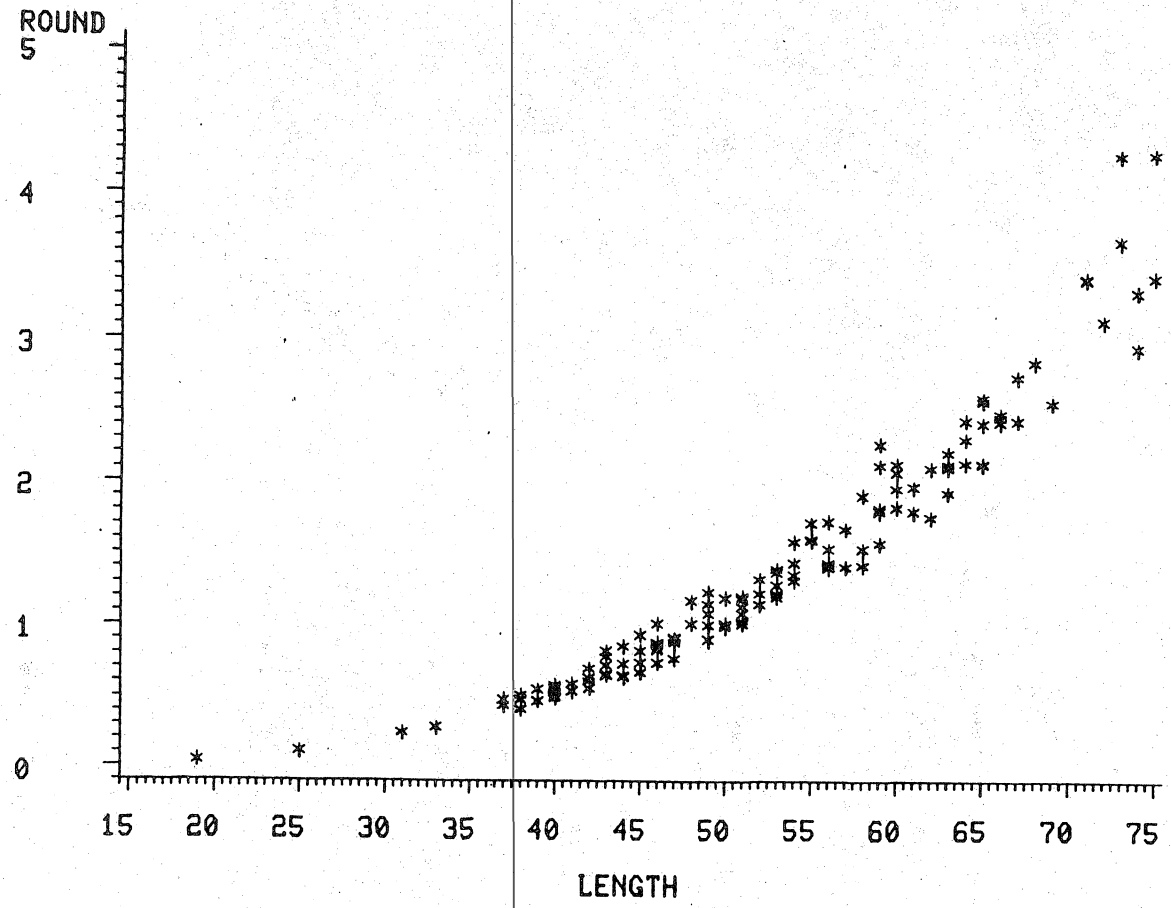
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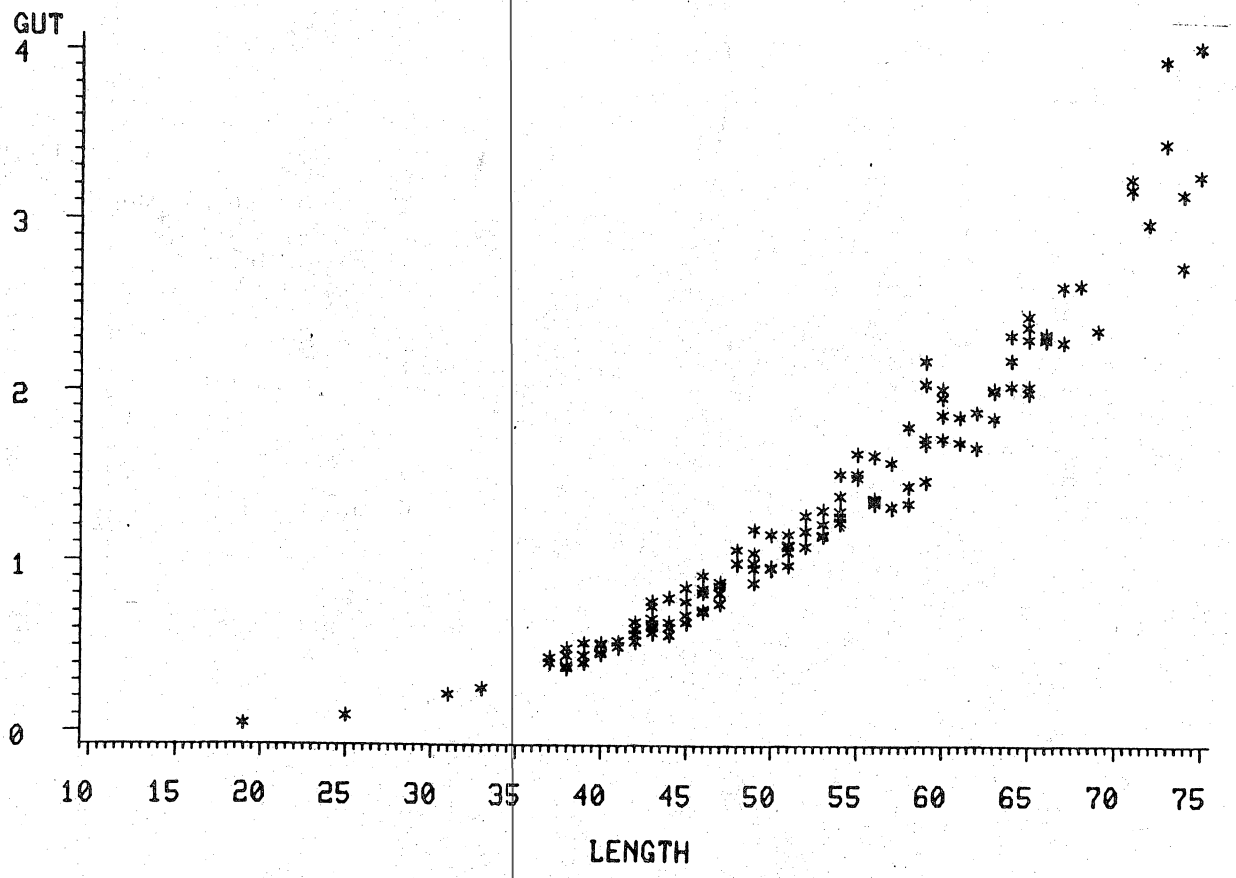
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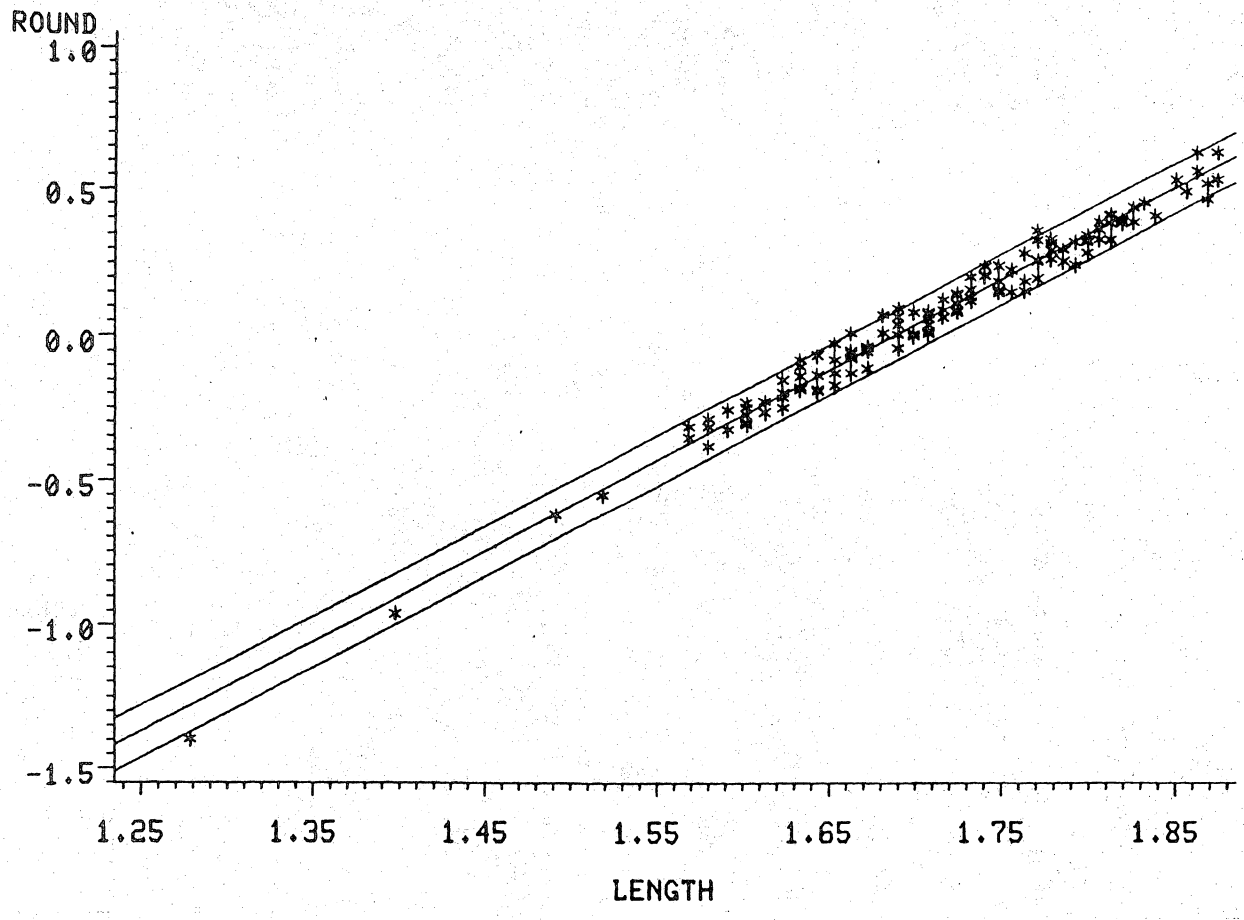
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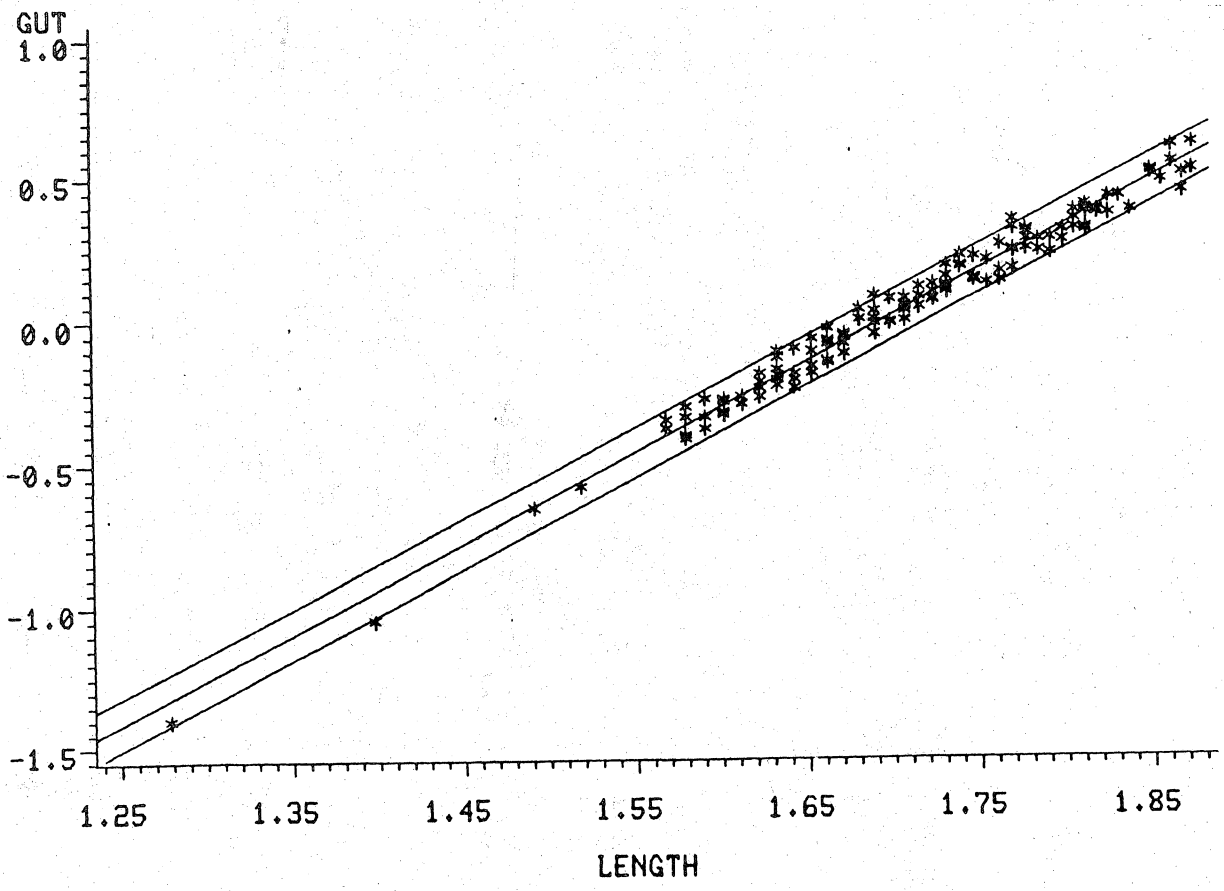
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