Lampiran 1. Simulasi densitas frekuensi gelombang dengan pembangkitan bilangan acak

| Simulasi Densitas Frekuensi Gelombang | | | | |
|---|---|---|---|---|
| 0.002 | 0.255 | 0.428 | 0.677 | 0.858 |
| 0.01 | 0.262 | 0.433 | 0.706 | 0.859 |
| 0.012 | 0.269 | 0.441 | 0.71 | 0.863 |
| 0.016 | 0.281 | 0.49 | 0.717 | 0.874 |
| 0.054 | 0.293 | 0.501 | 0.718 | 0.879 |
| 0.067 | 0.301 | 0.505 | 0.732 | 0.885 |
| 0.071 | 0.303 | 0.524 | 0.779 | 0.904 |
| 0.085 | 0.311 | 0.534 | 0.78 | 0.908 |
| 0.116 | 0.312 | 0.547 | 0.794 | 0.911 |
| 0.117 | 0.318 | 0.552 | 0.798 | 0.934 |
| 0.117 | 0.321 | 0.555 | 0.814 | 0.936 |
| 0.118 | 0.332 | 0.599 | 0.819 | 0.939 |
| 0.149 | 0.337 | 0.604 | 0.821 | 0.948 |
| 0.155 | 0.341 | 0.631 | 0.828 | 0.949 |
| 0.167 | 0.345 | 0.633 | 0.831 | 0.953 |
| 0.17 | 0.355 | 0.656 | 0.831 | 0.956 |
| 0.202 | 0.392 | 0.661 | 0.831 | 0.965 |
| 0.202 | 0.409 | 0.665 | 0.84 | 0.975 |
| 0.207 | 0.422 | 0.666 | 0.846 | 0.994 |
| 0.216 | 0.424 | 0.671 | 0.848 | 0.995 |

Lampiran 2. Spektrum Pierson Moskowitz

Spektrum Pierson Moskowitz dengan fungsi kerapatan spektral :

$$S(f) = \alpha_{pm} \cdot g^2 \cdot (2\pi)^{-4} \cdot f^{-5} \cdot \exp[-\beta(f_0/f)^4]$$

| frekuensi | S(f) untuk U= 20 m/s | S(f) untuk U=15 m/s |
|---|---|---|
| 0.002 | 0 | 0 |
| 0.01 | 0 | 0 |
| 0.012 | 0 | 0 |
| 0.016 | 8.4E-177 | 0 |
| 0.054 | 43.28083 | 0.040719 |
| 0.067 | 94.97786 | 5.018221 |
| 0.071 | 94.20431 | 9.14891 |
| 0.085 | 66.65297 | 21.42044 |
| 0.116 | 20.46554 | 14.75347 |
| 0.117 | 19.70626 | 14.3639 |
| 0.117 | 19.70626 | 14.3639 |
| 0.118 | 18.97803 | 13.98027 |
| 0.149 | 6.441701 | 5.712006 |
| 0.155 | 5.330938 | 4.810816 |
| 0.167 | 3.717081 | 3.444416 |
| 0.17 | 3.408729 | 3.175269 |
| 0.202 | 1.462809 | 1.411664 |
| 0.202 | 1.462809 | 1.411664 |
| 0.207 | 1.296461 | 1.255287 |
| 0.216 | 1.050408 | 1.022199 |
| 0.255 | 0.460872 | 0.454459 |
| 0.262 | 0.402777 | 0.397743 |
| 0.269 | 0.353234 | 0.349259 |
| 0.281 | 0.284221 | 0.281533 |
| 0.293 | 0.230751 | 0.228904 |
| 0.301 | 0.201751 | 0.2003 |
| 0.303 | 0.195197 | 0.193829 |
| 0.311 | 0.171405 | 0.170323 |
| 0.312 | 0.168682 | 0.16763 |
| 0.318 | 0.15339 | 0.152504 |
| 0.321 | 0.14637 | 0.145555 |
| 0.332 | 0.123717 | 0.123115 |
| 0.337 | 0.114822 | 0.114296 |
| 0.341 | 0.108254 | 0.107781 |
| 0.345 | 0.102132 | 0.101706 |
| 0.355 | 0.088554 | 0.088224 |
| 0.392 | 0.053971 | 0.053836 |
| 0.409 | 0.043657 | 0.043565 |
| 0.422 | 0.037339 | 0.037269 |
| 0.424 | 0.036467 | 0.0364 |
| 0.428 | 0.034796 | 0.034734 |
| 0.433 | 0.032834 | 0.032778 |
| 0.441 | 0.029963 | 0.029916 |

| frekuensi | S(f) untuk U= 20 m/s | S(f) untuk U=15 m/s |
|---|---|---|
| 0.49 | 0.017697 | 0.017679 |
| 0.501 | 0.015839 | 0.015824 |
| 0.505 | 0.015222 | 0.015208 |
| 0.524 | 0.012656 | 0.012646 |
| 0.534 | 0.011515 | 0.011506 |
| 0.547 | 0.01021 | 0.010203 |
| 0.552 | 0.009756 | 0.00975 |
| 0.555 | 0.009495 | 0.009489 |
| 0.599 | 0.006484 | 0.006481 |
| 0.604 | 0.00622 | 0.006218 |
| 0.631 | 0.004999 | 0.004997 |
| 0.633 | 0.00492 | 0.004919 |
| 0.656 | 0.004116 | 0.004115 |
| 0.661 | 0.003963 | 0.003962 |
| 0.665 | 0.003845 | 0.003844 |
| 0.666 | 0.003817 | 0.003815 |
| 0.671 | 0.003676 | 0.003675 |
| 0.677 | 0.003516 | 0.003515 |
| 0.706 | 0.002851 | 0.002851 |
| 0.71 | 0.002772 | 0.002771 |
| 0.717 | 0.002639 | 0.002639 |
| 0.718 | 0.002621 | 0.00262 |
| 0.732 | 0.00238 | 0.002379 |
| 0.779 | 0.001743 | 0.001743 |
| 0.78 | 0.001732 | 0.001732 |
| 0.794 | 0.001585 | 0.001585 |
| 0.798 | 0.001545 | 0.001545 |
| 0.814 | 0.001399 | 0.001399 |
| 0.819 | 0.001357 | 0.001357 |
| 0.821 | 0.001341 | 0.001341 |
| 0.828 | 0.001285 | 0.001285 |
| 0.831 | 0.001262 | 0.001262 |
| 0.831 | 0.001262 | 0.001262 |
| 0.831 | 0.001262 | 0.001262 |
| 0.84 | 0.001196 | 0.001196 |
| 0.846 | 0.001154 | 0.001154 |
| 0.848 | 0.001141 | 0.00114 |
| 0.858 | 0.001076 | 0.001075 |
| 0.859 | 0.001069 | 0.001069 |
| 0.863 | 0.001045 | 0.001045 |
| 0.874 | 0.000981 | 0.000981 |
| 0.879 | 0.000953 | 0.000953 |
| 0.885 | 0.000921 | 0.000921 |

| frekuensi | S(f) untuk U= 20 m/s | S(f) untuk U=15 m/s |
|---|---|---|
| 0.904 | 0.000828 | 0.000828 |
| 0.908 | 0.00081 | 0.00081 |
| 0.911 | 0.000797 | 0.000797 |
| 0.934 | 0.000704 | 0.000704 |
| 0.936 | 0.000696 | 0.000696 |
| 0.939 | 0.000685 | 0.000685 |
| 0.948 | 0.000653 | 0.000653 |
| 0.949 | 0.00065 | 0.00065 |
| 0.953 | 0.000636 | 0.000636 |
| 0.956 | 0.000626 | 0.000626 |
| 0.965 | 0.000598 | 0.000598 |
| 0.975 | 0.000568 | 0.000568 |
| 0.994 | 0.000515 | 0.000515 |
| 0.995 | 0.000513 | 0.000513 |

Lampiran 3. Spektrum Generalized Pierson Moskowitz

Spektrum Generalized Pierson Moskowitz dengan fungsi kerapatan spektral :

$$S(f) = A \cdot f^{5} \cdot \exp[-B \cdot f^{4}]$$

| frekuensi | S(f) |
|---|---|
| 0.002 | 0 |
| 0.01 | 0 |
| 0.012 | 0 |
| 0.016 | 1.9E-257 |
| 0.054 | 3.299286 |
| 0.067 | 16.473 |
| 0.071 | 18.50012 |
| 0.085 | 16.71041 |
| 0.116 | 6.050559 |
| 0.117 | 5.83923 |
| 0.117 | 5.83923 |
| 0.118 | 5.635603 |
| 0.149 | 1.986659 |
| 0.155 | 1.649996 |
| 0.167 | 1.156719 |
| 0.17 | 1.061898 |
| 0.202 | 0.458999 |
| 0.202 | 0.458999 |
| 0.207 | 0.407078 |
| 0.216 | 0.330159 |
| 0.255 | 0.14525 |
| 0.262 | 0.126978 |
| 0.269 | 0.111388 |
| 0.281 | 0.089659 |
| 0.293 | 0.072813 |
| 0.301 | 0.063673 |
| 0.303 | 0.061607 |
| 0.311 | 0.054105 |
| 0.312 | 0.053247 |
| 0.318 | 0.048424 |
| 0.321 | 0.04621 |
| 0.332 | 0.039064 |
| 0.337 | 0.036257 |
| 0.341 | 0.034185 |
| 0.345 | 0.032253 |
| 0.355 | 0.027968 |
| 0.392 | 0.01705 |
| 0.409 | 0.013793 |
| 0.422 | 0.011797 |
| 0.424 | 0.011522 |
| 0.428 | 0.010994 |
| 0.433 | 0.010374 |
| 0.441 | 0.009467 |
| 0.49 | 0.005592 |

| frekuensi | S(f) |
|---|---|
| 0.501 | 0.005005 |
| 0.505 | 0.00481 |
| 0.524 | 0.003999 |
| 0.534 | 0.003639 |
| 0.547 | 0.003227 |
| 0.552 | 0.003083 |
| 0.555 | 0.003001 |
| 0.599 | 0.002049 |
| 0.604 | 0.001966 |
| 0.631 | 0.00158 |
| 0.633 | 0.001555 |
| 0.656 | 0.001301 |
| 0.661 | 0.001253 |
| 0.665 | 0.001215 |
| 0.666 | 0.001206 |
| 0.671 | 0.001162 |
| 0.677 | 0.001111 |
| 0.706 | 0.000901 |
| 0.71 | 0.000876 |
| 0.717 | 0.000834 |
| 0.718 | 0.000828 |
| 0.732 | 0.000752 |
| 0.779 | 0.000551 |
| 0.78 | 0.000547 |
| 0.794 | 0.000501 |
| 0.798 | 0.000488 |
| 0.814 | 0.000442 |
| 0.819 | 0.000429 |
| 0.821 | 0.000424 |
| 0.828 | 0.000406 |
| 0.831 | 0.000399 |
| 0.831 | 0.000399 |
| 0.831 | 0.000399 |
| 0.84 | 0.000378 |
| 0.846 | 0.000365 |
| 0.848 | 0.00036 |
| 0.858 | 0.00034 |
| 0.859 | 0.000338 |
| 0.863 | 0.00033 |
| 0.874 | 0.00031 |
| 0.879 | 0.000301 |
| 0.885 | 0.000291 |
| 0.904 | 0.000262 |
| 0.908 | 0.000256 |

| frekuensi | S(f) |
|---|---|
| 0.911 | 0.000252 |
| 0.934 | 0.000222 |
| 0.936 | 0.00022 |
| 0.939 | 0.000217 |
| 0.948 | 0.000206 |
| 0.949 | 0.000205 |
| 0.953 | 0.000201 |
| 0.956 | 0.000198 |
| 0.965 | 0.000189 |
| 0.975 | 0.000179 |
| 0.994 | 0.000163 |
| 0.995 | 0.000162 |

Lampiran 4. Spektrum JONSWAP

Spektrum JONSWAP dengan fungsi kerapatan spektral :

$$S(f) = G(f)\cdot\alpha_j\cdot g^2\cdot(2\pi)^{-4}\cdot f^{-5}\cdot\exp[-(5/4)\cdot(f_m/f)^4]$$

1. Untuk kecepatan angin 20 m/s

| Frekuensi | S(f) untuk P-M | σ | G(f) 20 | S(f) JONSWAP |
|---|---|---|---|---|
| 0.002 | 0 | 0.07 | 1.001438 | 0 |
| 0.01 | 0 | 0.07 | 1.006812 | 0 |
| 0.012 | 0 | 0.07 | 1.009742 | 0 |
| 0.016 | 8.4E-177 | 0.07 | 1.019218 | 4.1E-162 |
| 0.054 | 43.28083 | 0.07 | 2.490314 | 98.68427 |
| 0.067 | 94.97786 | 0.07 | 3.3 | 246.4678 |
| 0.071 | 94.20431 | 0.09 | 3.223648 | 233.3765 |
| 0.085 | 66.65297 | 0.09 | 2.224487 | 108.9078 |
| 0.116 | 20.46554 | 0.09 | 1.063072 | 15.50043 |
| 0.117 | 19.70626 | 0.09 | 1.055601 | 14.81428 |
| 0.117 | 19.70626 | 0.09 | 1.055601 | 14.81428 |
| 0.118 | 18.97803 | 0.09 | 1.04891 | 14.17074 |
| 0.149 | 6.441701 | 0.09 | 1.00029 | 4.555002 |
| 0.155 | 5.330938 | 0.09 | 1.000082 | 3.766284 |
| 0.167 | 3.717081 | 0.09 | 1.000005 | 2.623274 |
| 0.17 | 3.408729 | 0.09 | 1.000002 | 2.405177 |
| 0.202 | 1.462809 | 0.09 | 1 | 1.030769 |
| 0.202 | 1.462809 | 0.09 | 1 | 1.030769 |
| 0.207 | 1.296461 | 0.09 | 1 | 0.913437 |
| 0.216 | 1.050408 | 0.09 | 1 | 0.739936 |
| 0.255 | 0.460872 | 0.09 | 1 | 0.324489 |
| 0.262 | 0.402777 | 0.09 | 1 | 0.28357 |
| 0.269 | 0.353234 | 0.09 | 1 | 0.248678 |
| 0.281 | 0.284221 | 0.09 | 1 | 0.200079 |
| 0.293 | 0.230751 | 0.09 | 1 | 0.16243 |
| 0.301 | 0.201751 | 0.09 | 1 | 0.142011 |
| 0.303 | 0.195197 | 0.09 | 1 | 0.137397 |
| 0.311 | 0.171405 | 0.09 | 1 | 0.120647 |
| 0.312 | 0.168682 | 0.09 | 1 | 0.11873 |
| 0.318 | 0.15339 | 0.09 | 1 | 0.107965 |
| 0.321 | 0.14637 | 0.09 | 1 | 0.103023 |
| 0.332 | 0.123717 | 0.09 | 1 | 0.087076 |
| 0.337 | 0.114822 | 0.09 | 1 | 0.080815 |
| 0.341 | 0.108254 | 0.09 | 1 | 0.076192 |
| 0.345 | 0.102132 | 0.09 | 1 | 0.071882 |
| 0.355 | 0.088554 | 0.09 | 1 | 0.062324 |
| 0.392 | 0.053971 | 0.09 | 1 | 0.037983 |
| 0.409 | 0.043657 | 0.09 | 1 | 0.030724 |
| 0.422 | 0.037339 | 0.09 | 1 | 0.026277 |

| Frekuensi | S(f) untuk P-M | σ | G(f) 20 | S(f) JONSWAP |
|---|---|---|---|---|
| 0.424 | 0.036467 | 0.09 | 1 | 0.025664 |
| 0.428 | 0.034796 | 0.09 | 1 | 0.024487 |
| 0.433 | 0.032834 | 0.09 | 1 | 0.023107 |
| 0.441 | 0.029963 | 0.09 | 1 | 0.021087 |
| 0.49 | 0.017697 | 0.09 | 1 | 0.012454 |
| 0.501 | 0.015839 | 0.09 | 1 | 0.011146 |
| 0.505 | 0.015222 | 0.09 | 1 | 0.010712 |
| 0.524 | 0.012656 | 0.09 | 1 | 0.008906 |
| 0.534 | 0.011515 | 0.09 | 1 | 0.008103 |
| 0.547 | 0.01021 | 0.09 | 1 | 0.007185 |
| 0.552 | 0.009756 | 0.09 | 1 | 0.006866 |
| 0.555 | 0.009495 | 0.09 | 1 | 0.006682 |
| 0.599 | 0.006484 | 0.09 | 1 | 0.004563 |
| 0.604 | 0.00622 | 0.09 | 1 | 0.004377 |
| 0.631 | 0.004999 | 0.09 | 1 | 0.003518 |
| 0.633 | 0.00492 | 0.09 | 1 | 0.003463 |
| 0.656 | 0.004116 | 0.09 | 1 | 0.002897 |
| 0.661 | 0.003963 | 0.09 | 1 | 0.002789 |
| 0.665 | 0.003845 | 0.09 | 1 | 0.002706 |
| 0.666 | 0.003817 | 0.09 | 1 | 0.002686 |
| 0.671 | 0.003676 | 0.09 | 1 | 0.002587 |
| 0.677 | 0.003516 | 0.09 | 1 | 0.002475 |
| 0.706 | 0.002851 | 0.09 | 1 | 0.002006 |
| 0.71 | 0.002772 | 0.09 | 1 | 0.001951 |
| 0.717 | 0.002639 | 0.09 | 1 | 0.001857 |
| 0.718 | 0.002621 | 0.09 | 1 | 0.001844 |
| 0.732 | 0.00238 | 0.09 | 1 | 0.001675 |
| 0.779 | 0.001743 | 0.09 | 1 | 0.001227 |
| 0.78 | 0.001732 | 0.09 | 1 | 0.001219 |
| 0.794 | 0.001585 | 0.09 | 1 | 0.001115 |
| 0.798 | 0.001545 | 0.09 | 1 | 0.001088 |
| 0.814 | 0.001399 | 0.09 | 1 | 0.000985 |
| 0.819 | 0.001357 | 0.09 | 1 | 0.000955 |
| 0.821 | 0.001341 | 0.09 | 1 | 0.000944 |
| 0.828 | 0.001285 | 0.09 | 1 | 0.000904 |
| 0.831 | 0.001262 | 0.09 | 1 | 0.000888 |
| 0.831 | 0.001262 | 0.09 | 1 | 0.000888 |
| 0.831 | 0.001262 | 0.09 | 1 | 0.000888 |
| 0.84 | 0.001196 | 0.09 | 1 | 0.000842 |
| 0.846 | 0.001154 | 0.09 | 1 | 0.000812 |
| 0.848 | 0.001141 | 0.09 | 1 | 0.000803 |
| 0.858 | 0.001076 | 0.09 | 1 | 0.000757 |
| 0.859 | 0.001069 | 0.09 | 1 | 0.000752 |
| 0.863 | 0.001045 | 0.09 | 1 | 0.000735 |
| 0.874 | 0.000981 | 0.09 | 1 | 0.00069 |
| 0.879 | 0.000953 | 0.09 | 1 | 0.000671 |
| 0.885 | 0.000921 | 0.09 | 1 | 0.000648 |
| 0.904 | 0.000828 | 0.09 | 1 | 0.000583 |
| 0.908 | 0.00081 | 0.09 | 1 | 0.00057 |

| Frekuensi | S(f) untuk P-M | σ | G(f) 20 | S(f) JONSWAP |
|---|---|---|---|---|
| 0.911 | 0.000797 | 0.09 | 1 | 0.000561 |
| 0.934 | 0.000704 | 0.09 | 1 | 0.000495 |
| 0.936 | 0.000696 | 0.09 | 1 | 0.00049 |
| 0.939 | 0.000685 | 0.09 | 1 | 0.000482 |
| 0.948 | 0.000653 | 0.09 | 1 | 0.00046 |
| 0.949 | 0.00065 | 0.09 | 1 | 0.000457 |
| 0.953 | 0.000636 | 0.09 | 1 | 0.000448 |
| 0.956 | 0.000626 | 0.09 | 1 | 0.000441 |
| 0.965 | 0.000598 | 0.09 | 1 | 0.000421 |
| 0.975 | 0.000568 | 0.09 | 1 | 0.000399 |
| 0.994 | 0.000515 | 0.09 | 1 | 0.000363 |
| 0.995 | 0.000513 | 0.09 | 1 | 0.000361 |

2. Untuk kecepatan angin 15 m/s

| Frekuensi | S(f) P-M | σ | G(f) 15 | S(f) JONSWAP |
|---|---|---|---|---|
| 0.002 | 0 | 0.07 | 1.001317 | 0 |
| 0.01 | 0 | 0.07 | 1.004601 | 0 |
| 0.012 | 0 | 0.07 | 1.00617 | 0 |
| 0.016 | 0 | 0.07 | 1.010843 | 0 |
| 0.054 | 0.040719 | 0.07 | 1.586776 | 0.565386 |
| 0.067 | 5.018221 | 0.07 | 2.379027 | 24.33531 |
| 0.071 | 9.14891 | 0.07 | 2.674088 | 40.01416 |
| 0.085 | 21.42044 | 0.07 | 3.3 | 74.99627 |
| 0.116 | 14.75347 | 0.09 | 1.768687 | 20.67002 |
| 0.117 | 14.3639 | 0.09 | 1.721631 | 19.51071 |
| 0.117 | 14.3639 | 0.09 | 1.721631 | 19.51071 |
| 0.118 | 13.98027 | 0.09 | 1.676631 | 18.42261 |
| 0.149 | 5.712006 | 0.09 | 1.052517 | 4.418675 |
| 0.155 | 4.810816 | 0.09 | 1.027967 | 3.611716 |
| 0.167 | 3.444416 | 0.09 | 1.006808 | 2.508528 |
| 0.17 | 3.175269 | 0.09 | 1.004626 | 2.303133 |
| 0.202 | 1.411664 | 0.09 | 1.000032 | 1.006295 |
| 0.202 | 1.411664 | 0.09 | 1.000032 | 1.006295 |
| 0.207 | 1.255287 | 0.09 | 1.000013 | 0.893733 |
| 0.216 | 1.022199 | 0.09 | 1.000002 | 0.726444 |
| 0.255 | 0.454459 | 0.09 | 1 | 0.321429 |
| 0.262 | 0.397743 | 0.09 | 1 | 0.281169 |
| 0.269 | 0.349259 | 0.09 | 1 | 0.246783 |
| 0.281 | 0.281533 | 0.09 | 1 | 0.198798 |
| 0.293 | 0.228904 | 0.09 | 1 | 0.161549 |
| 0.301 | 0.2003 | 0.09 | 1 | 0.14132 |
| 0.303 | 0.193829 | 0.09 | 1 | 0.136746 |
| 0.311 | 0.170323 | 0.09 | 1 | 0.120132 |
| 0.312 | 0.16763 | 0.09 | 1 | 0.118229 |

| Frekuensi | S(f) P-M | σ | G(f) 15 | S(f) JONSWAP |
|---|---|---|---|---|
| 0.318 | 0.152504 | 0.09 | 1 | 0.107543 |
| 0.321 | 0.145555 | 0.09 | 1 | 0.102635 |
| 0.332 | 0.123115 | 0.09 | 1 | 0.086789 |
| 0.337 | 0.114296 | 0.09 | 1 | 0.080564 |
| 0.341 | 0.107781 | 0.09 | 1 | 0.075966 |
| 0.345 | 0.101706 | 0.09 | 1 | 0.071679 |
| 0.355 | 0.088224 | 0.09 | 1 | 0.062167 |
| 0.392 | 0.053836 | 0.09 | 1 | 0.037919 |
| 0.409 | 0.043565 | 0.09 | 1 | 0.03068 |
| 0.422 | 0.037269 | 0.09 | 1 | 0.026244 |
| 0.424 | 0.0364 | 0.09 | 1 | 0.025632 |
| 0.428 | 0.034734 | 0.09 | 1 | 0.024458 |
| 0.433 | 0.032778 | 0.09 | 1 | 0.02308 |
| 0.441 | 0.029916 | 0.09 | 1 | 0.021064 |
| 0.49 | 0.017679 | 0.09 | 1 | 0.012446 |
| 0.501 | 0.015824 | 0.09 | 1 | 0.011139 |
| 0.505 | 0.015208 | 0.09 | 1 | 0.010705 |
| 0.524 | 0.012646 | 0.09 | 1 | 0.008901 |
| 0.534 | 0.011506 | 0.09 | 1 | 0.008099 |
| 0.547 | 0.010203 | 0.09 | 1 | 0.007182 |
| 0.552 | 0.00975 | 0.09 | 1 | 0.006863 |
| 0.555 | 0.009489 | 0.09 | 1 | 0.006679 |
| 0.599 | 0.006481 | 0.09 | 1 | 0.004562 |
| 0.604 | 0.006218 | 0.09 | 1 | 0.004376 |
| 0.631 | 0.004997 | 0.09 | 1 | 0.003517 |
| 0.633 | 0.004919 | 0.09 | 1 | 0.003462 |
| 0.656 | 0.004115 | 0.09 | 1 | 0.002896 |
| 0.661 | 0.003962 | 0.09 | 1 | 0.002788 |
| 0.665 | 0.003844 | 0.09 | 1 | 0.002705 |
| 0.666 | 0.003815 | 0.09 | 1 | 0.002685 |
| 0.671 | 0.003675 | 0.09 | 1 | 0.002587 |
| 0.677 | 0.003515 | 0.09 | 1 | 0.002474 |
| 0.706 | 0.002851 | 0.09 | 1 | 0.002006 |
| 0.71 | 0.002771 | 0.09 | 1 | 0.00195 |
| 0.717 | 0.002639 | 0.09 | 1 | 0.001857 |
| 0.718 | 0.00262 | 0.09 | 1 | 0.001844 |
| 0.732 | 0.002379 | 0.09 | 1 | 0.001674 |
| 0.779 | 0.001743 | 0.09 | 1 | 0.001227 |
| 0.78 | 0.001732 | 0.09 | 1 | 0.001219 |
| 0.794 | 0.001585 | 0.09 | 1 | 0.001115 |
| 0.798 | 0.001545 | 0.09 | 1 | 0.001087 |
| 0.814 | 0.001399 | 0.09 | 1 | 0.000985 |
| 0.819 | 0.001357 | 0.09 | 1 | 0.000955 |
| 0.821 | 0.001341 | 0.09 | 1 | 0.000943 |
| 0.828 | 0.001285 | 0.09 | 1 | 0.000904 |
| 0.831 | 0.001262 | 0.09 | 1 | 0.000888 |
| 0.831 | 0.001262 | 0.09 | 1 | 0.000888 |
| 0.831 | 0.001262 | 0.09 | 1 | 0.000888 |
| 0.84 | 0.001196 | 0.09 | 1 | 0.000841 |

| Frekuensi | S(f) P-M | σ | G(f) 15 | S(f) JONSWAP |
|---|---|---|---|---|
| 0.846 | 0.001154 | 0.09 | 1 | 0.000812 |
| 0.848 | 0.00114 | 0.09 | 1 | 0.000803 |
| 0.858 | 0.001075 | 0.09 | 1 | 0.000757 |
| 0.859 | 0.001069 | 0.09 | 1 | 0.000752 |
| 0.863 | 0.001045 | 0.09 | 1 | 0.000735 |
| 0.874 | 0.000981 | 0.09 | 1 | 0.00069 |
| 0.879 | 0.000953 | 0.09 | 1 | 0.000671 |
| 0.885 | 0.000921 | 0.09 | 1 | 0.000648 |
| 0.904 | 0.000828 | 0.09 | 1 | 0.000583 |
| 0.908 | 0.00081 | 0.09 | 1 | 0.00057 |
| 0.911 | 0.000797 | 0.09 | 1 | 0.000561 |
| 0.934 | 0.000704 | 0.09 | 1 | 0.000495 |
| 0.936 | 0.000696 | 0.09 | 1 | 0.00049 |
| 0.939 | 0.000685 | 0.09 | 1 | 0.000482 |
| 0.948 | 0.000653 | 0.09 | 1 | 0.00046 |
| 0.949 | 0.00065 | 0.09 | 1 | 0.000457 |
| 0.953 | 0.000636 | 0.09 | 1 | 0.000448 |
| 0.956 | 0.000626 | 0.09 | 1 | 0.000441 |
| 0.965 | 0.000598 | 0.09 | 1 | 0.000421 |
| 0.975 | 0.000568 | 0.09 | 1 | 0.000399 |
| 0.994 | 0.000515 | 0.09 | 1 | 0.000363 |
| 0.995 | 0.000513 | 0.09 | 1 | 0.000361 |

Lampiran 5. Spektrum Phillips

Spektrum Phillips dengan fungsi kerapatan spektral :

$$S(f) = \alpha \cdot g^2 \cdot (2\pi)^{-4} \cdot f^{-5} \quad \text{,untuk } f > f_0$$

$$= 0 \quad \text{,untuk } f < f_0$$

| frekuensi | S(f) untuk U=20 m/s | S(f) untuk U=15m/s |
|---|---|---|
| 0.002 | 0 | 0 |
| 0.01 | 0 | 0 |
| 0.012 | 0 | 0 |
| 0.016 | 0 | 0 |
| 0.054 | 0 | 0 |
| 0.067 | 0 | 0 |
| 0.071 | 0 | 0 |
| 0.085 | 112.7208 | 0 |
| 0.116 | 23.8127 | 23.8127 |
| 0.117 | 22.81231 | 22.81231 |
| 0.117 | 22.81231 | 22.81231 |
| 0.118 | 21.86193 | 21.86193 |
| 0.149 | 6.810316 | 6.810316 |
| 0.155 | 5.590364 | 5.590364 |
| 0.167 | 3.850492 | 3.850492 |
| 0.17 | 3.522524 | 3.522524 |
| 0.202 | 1.487105 | 1.487105 |
| 0.202 | 1.487105 | 1.487105 |
| 0.207 | 1.315973 | 1.315973 |
| 0.216 | 1.063726 | 1.063726 |
| 0.255 | 0.463872 | 0.463872 |
| 0.262 | 0.405128 | 0.405128 |
| 0.269 | 0.355089 | 0.355089 |
| 0.281 | 0.285474 | 0.285474 |
| 0.293 | 0.231612 | 0.231612 |
| 0.301 | 0.202426 | 0.202426 |
| 0.303 | 0.195833 | 0.195833 |
| 0.311 | 0.171908 | 0.171908 |
| 0.312 | 0.169171 | 0.169171 |
| 0.318 | 0.153802 | 0.153802 |
| 0.321 | 0.146748 | 0.146748 |
| 0.332 | 0.123996 | 0.123996 |
| 0.337 | 0.115067 | 0.115067 |
| 0.341 | 0.108474 | 0.108474 |
| 0.345 | 0.10233 | 0.10233 |
| 0.355 | 0.088707 | 0.088707 |
| 0.392 | 0.054034 | 0.054034 |
| 0.409 | 0.0437 | 0.0437 |

| frekuensi | S(f) untuk U=20 m/s | S(f) untuk U=15m/s |
|---|---|---|
| 0.422 | 0.037371 | 0.037371 |
| 0.424 | 0.036498 | 0.036498 |
| 0.428 | 0.034824 | 0.034824 |
| 0.433 | 0.032859 | 0.032859 |
| 0.441 | 0.029985 | 0.029985 |
| 0.49 | 0.017706 | 0.017706 |
| 0.501 | 0.015846 | 0.015846 |
| 0.505 | 0.015228 | 0.015228 |
| 0.524 | 0.01266 | 0.01266 |
| 0.534 | 0.011518 | 0.011518 |
| 0.547 | 0.010213 | 0.010213 |
| 0.552 | 0.009759 | 0.009759 |
| 0.555 | 0.009498 | 0.009498 |
| 0.599 | 0.006486 | 0.006486 |
| 0.604 | 0.006222 | 0.006222 |
| 0.631 | 0.005 | 0.005 |
| 0.633 | 0.004921 | 0.004921 |
| 0.656 | 0.004117 | 0.004117 |
| 0.661 | 0.003964 | 0.003964 |
| 0.665 | 0.003846 | 0.003846 |
| 0.666 | 0.003817 | 0.003817 |
| 0.671 | 0.003677 | 0.003677 |
| 0.677 | 0.003517 | 0.003517 |
| 0.706 | 0.002852 | 0.002852 |
| 0.71 | 0.002772 | 0.002772 |
| 0.717 | 0.002639 | 0.002639 |
| 0.718 | 0.002621 | 0.002621 |
| 0.732 | 0.00238 | 0.00238 |
| 0.779 | 0.001743 | 0.001743 |
| 0.78 | 0.001732 | 0.001732 |
| 0.794 | 0.001585 | 0.001585 |
| 0.798 | 0.001546 | 0.001546 |
| 0.814 | 0.0014 | 0.0014 |
| 0.819 | 0.001357 | 0.001357 |
| 0.821 | 0.001341 | 0.001341 |
| 0.828 | 0.001285 | 0.001285 |
| 0.831 | 0.001262 | 0.001262 |
| 0.831 | 0.001262 | 0.001262 |

| frekuensi | S(f) untuk U=20 m/s | S(f) untuk U=15m/s |
|---|---|---|
| 0.831 | 0.001262 | 0.001262 |
| 0.84 | 0.001196 | 0.001196 |
| 0.846 | 0.001154 | 0.001154 |
| 0.848 | 0.001141 | 0.001141 |
| 0.858 | 0.001076 | 0.001076 |
| 0.859 | 0.001069 | 0.001069 |
| 0.863 | 0.001045 | 0.001045 |
| 0.874 | 0.000981 | 0.000981 |
| 0.879 | 0.000953 | 0.000953 |
| 0.885 | 0.000921 | 0.000921 |
| 0.904 | 0.000828 | 0.000828 |
| 0.908 | 0.00081 | 0.00081 |
| 0.911 | 0.000797 | 0.000797 |
| 0.934 | 0.000704 | 0.000704 |
| 0.936 | 0.000696 | 0.000696 |
| 0.939 | 0.000685 | 0.000685 |
| 0.948 | 0.000653 | 0.000653 |
| 0.949 | 0.00065 | 0.00065 |
| 0.953 | 0.000636 | 0.000636 |
| 0.956 | 0.000626 | 0.000626 |
| 0.965 | 0.000598 | 0.000598 |
| 0.975 | 0.000568 | 0.000568 |
| 0.994 | 0.000515 | 0.000515 |
| 0.995 | 0.000513 | 0.000513 |

Lampiran 6. Spektrum JONSWAP Untuk Pantai Utara Jawa dengan Kecepatan Angin 11,94 m/s.

| Frekuensi | S(f) P-M | σ | G(f) | S(f) JONSWAP |
|---|---|---|---|---|
| 0.002 | 0 | 0.07 | 1.001206 | 0 |
| 0.01 | 0 | 0.07 | 1.003071 | 0 |
| 0.012 | 0 | 0.07 | 1.00384 | 0 |
| 0.016 | 0 | 0.07 | 1.005928 | 0 |
| 0.054 | 1.02E-08 | 0.07 | 1.16785 | 2.47E-09 |
| 0.067 | 0.00823 | 0.07 | 1.396233 | 0.004822 |
| 0.071 | 0.056594 | 0.07 | 1.503072 | 0.03973 |
| 0.085 | 1.80162 | 0.07 | 2.047979 | 2.126758 |
| 0.116 | 7.226444 | 0.07 | 3.3 | 15.84325 |
| 0.117 | 7.207174 | 0.09 | 3.298374 | 15.82391 |
| 0.117 | 7.207174 | 0.09 | 3.298374 | 15.82391 |
| 0.118 | 7.178484 | 0.09 | 3.293505 | 15.76696 |
| 0.149 | 4.394602 | 0.09 | 2.141642 | 6.484526 |
| 0.155 | 3.845771 | 0.09 | 1.89111 | 5.026348 |
| 0.167 | 2.917142 | 0.09 | 1.503722 | 3.045783 |
| 0.17 | 2.720086 | 0.09 | 1.430744 | 2.704693 |
| 0.202 | 1.306238 | 0.09 | 1.057959 | 0.966415 |
| 0.202 | 1.306238 | 0.09 | 1.057959 | 0.966415 |
| 0.207 | 1.16997 | 0.09 | 1.039871 | 0.851295 |
| 0.216 | 0.96328 | 0.09 | 1.019413 | 0.687724 |
| 0.255 | 0.440779 | 0.09 | 1.00041 | 0.309541 |
| 0.262 | 0.386983 | 0.09 | 1.00018 | 0.271769 |
| 0.269 | 0.340745 | 0.09 | 1.000076 | 0.239325 |
| 0.281 | 0.275757 | 0.09 | 1.000016 | 0.193731 |
| 0.293 | 0.224925 | 0.09 | 1.000003 | 0.158057 |
| 0.301 | 0.197171 | 0.09 | 1.000001 | 0.138574 |
| 0.303 | 0.19088 | 0.09 | 1.000001 | 0.134157 |
| 0.311 | 0.167986 | 0.09 | 1 | 0.118081 |
| 0.312 | 0.16536 | 0.09 | 1 | 0.116236 |
| 0.318 | 0.150589 | 0.09 | 1 | 0.105862 |
| 0.321 | 0.143794 | 0.09 | 1 | 0.101089 |
| 0.332 | 0.121812 | 0.09 | 1 | 0.085646 |
| 0.337 | 0.113156 | 0.09 | 1 | 0.079564 |
| 0.341 | 0.106756 | 0.09 | 1 | 0.075067 |
| 0.345 | 0.100782 | 0.09 | 1 | 0.070869 |
| 0.355 | 0.087509 | 0.09 | 1 | 0.06154 |
| 0.392 | 0.053542 | 0.09 | 1 | 0.037661 |
| 0.409 | 0.043364 | 0.09 | 1 | 0.030504 |

| Frekuensi | S(f) P-M | σ | G(f) | S(f) JONSWAP |
|---|---|---|---|---|
| 0.422 | 0.037118 | 0.09 | 1 | 0.026111 |
| 0.424 | 0.036255 | 0.09 | 1 | 0.025505 |
| 0.428 | 0.034601 | 0.09 | 1 | 0.024341 |
| 0.433 | 0.032658 | 0.09 | 1 | 0.022975 |
| 0.441 | 0.029814 | 0.09 | 1 | 0.020975 |
| 0.49 | 0.01764 | 0.09 | 1 | 0.012411 |
| 0.501 | 0.015791 | 0.09 | 1 | 0.011111 |
| 0.505 | 0.015177 | 0.09 | 1 | 0.010679 |
| 0.524 | 0.012624 | 0.09 | 1 | 0.008882 |
| 0.534 | 0.011488 | 0.09 | 1 | 0.008083 |
| 0.547 | 0.010189 | 0.09 | 1 | 0.007169 |
| 0.552 | 0.009736 | 0.09 | 1 | 0.006851 |
| 0.555 | 0.009476 | 0.09 | 1 | 0.006668 |
| 0.599 | 0.006475 | 0.09 | 1 | 0.004556 |
| 0.604 | 0.006212 | 0.09 | 1 | 0.004371 |
| 0.631 | 0.004993 | 0.09 | 1 | 0.003513 |
| 0.633 | 0.004915 | 0.09 | 1 | 0.003458 |
| 0.656 | 0.004112 | 0.09 | 1 | 0.002894 |
| 0.661 | 0.003959 | 0.09 | 1 | 0.002786 |
| 0.665 | 0.003842 | 0.09 | 1 | 0.002703 |
| 0.666 | 0.003813 | 0.09 | 1 | 0.002683 |
| 0.671 | 0.003673 | 0.09 | 1 | 0.002585 |
| 0.677 | 0.003513 | 0.09 | 1 | 0.002472 |
| 0.706 | 0.002849 | 0.09 | 1 | 0.002005 |
| 0.71 | 0.00277 | 0.09 | 1 | 0.001949 |
| 0.717 | 0.002637 | 0.09 | 1 | 0.001856 |
| 0.718 | 0.002619 | 0.09 | 1 | 0.001843 |
| 0.732 | 0.002378 | 0.09 | 1 | 0.001673 |
| 0.779 | 0.001742 | 0.09 | 1 | 0.001226 |
| 0.78 | 0.001731 | 0.09 | 1 | 0.001218 |
| 0.794 | 0.001584 | 0.09 | 1 | 0.001115 |
| 0.798 | 0.001545 | 0.09 | 1 | 0.001087 |
| 0.814 | 0.001399 | 0.09 | 1 | 0.000984 |
| 0.819 | 0.001357 | 0.09 | 1 | 0.000955 |
| 0.821 | 0.00134 | 0.09 | 1 | 0.000943 |
| 0.828 | 0.001285 | 0.09 | 1 | 0.000904 |
| 0.831 | 0.001262 | 0.09 | 1 | 0.000888 |
| 0.831 | 0.001262 | 0.09 | 1 | 0.000888 |
| 0.831 | 0.001262 | 0.09 | 1 | 0.000888 |
| 0.84 | 0.001195 | 0.09 | 1 | 0.000841 |
| 0.846 | 0.001154 | 0.09 | 1 | 0.000812 |
| 0.848 | 0.00114 | 0.09 | 1 | 0.000802 |
| 0.858 | 0.001075 | 0.09 | 1 | 0.000757 |
| 0.859 | 0.001069 | 0.09 | 1 | 0.000752 |
| 0.863 | 0.001044 | 0.09 | 1 | 0.000735 |

| Frekuensi | S(f) P-M | σ | G(f) | S(f) JONSWAP |
|---|---|---|---|---|
| 0.874 | 0.00098 | 0.09 | 1 | 0.00069 |
| 0.879 | 0.000953 | 0.09 | 1 | 0.00067 |
| 0.885 | 0.000921 | 0.09 | 1 | 0.000648 |
| 0.904 | 0.000828 | 0.09 | 1 | 0.000583 |
| 0.908 | 0.00081 | 0.09 | 1 | 0.00057 |
| 0.911 | 0.000797 | 0.09 | 1 | 0.000561 |
| 0.934 | 0.000703 | 0.09 | 1 | 0.000495 |
| 0.936 | 0.000696 | 0.09 | 1 | 0.00049 |
| 0.939 | 0.000685 | 0.09 | 1 | 0.000482 |
| 0.948 | 0.000653 | 0.09 | 1 | 0.00046 |
| 0.949 | 0.00065 | 0.09 | 1 | 0.000457 |
| 0.953 | 0.000636 | 0.09 | 1 | 0.000448 |
| 0.956 | 0.000626 | 0.09 | 1 | 0.000441 |
| 0.965 | 0.000598 | 0.09 | 1 | 0.00042 |
| 0.975 | 0.000568 | 0.09 | 1 | 0.000399 |
| 0.994 | 0.000515 | 0.09 | 1 | 0.000363 |
| 0.995 | 0.000513 | 0.09 | 1 | 0.000361 |

Lampiran 7. Iterasi Untuk Mencari Panjang Gelombang dengan FORTRAN 77

```
C       PROGRAM UNTUK MENGHITUNG PANJANG GELOMBANG
        CHARACTER NAMA1*10
        DIMENSION D(10)
        DATA D(1)/5./
        G=9.81
        E=2.718281828
        PI=3.141592654
        I=0
        T=8.62069
        N=1
        DO 10 J=1,N
        AL0=1.56*T**2
        AL2=AL0
2       AL1=G*T**2*TANH(2.*PI*D(J)/AL2)/(2.*PI)
        I=I+1
        WRITE(*,'(3X,I4,F9.2)')I,AL1
        IF(ABS(AL1-AL2).LE.0.01)GOTO 3
        AL2=(AL1+AL2)/2.
        GOTO 2
C       C=AL1/T
3       WRITE(*,'(3X,I4,F9.2)')I,AL1
        I=0
10      CONTINUE
        STOP
        END
```

Lampiran 8. Uji Kolmogorov Smirnov Untuk Kebaikan Suai U[0,1]

| F | n | F kum | Prob Kum |
|---|---|---|---|
| 0.002 | 1 | 1 | 0.01 |
| 0.01 | 1 | 2 | 0.02 |
| 0.012 | 1 | 3 | 0.03 |
| 0.016 | 1 | 4 | 0.04 |
| 0.054 | 1 | 5 | 0.05 |
| 0.067 | 1 | 6 | 0.06 |
| 0.071 | 1 | 7 | 0.07 |
| 0.085 | 1 | 8 | 0.08 |
| 0.116 | 1 | 9 | 0.09 |
| 0.117 | 2 | 11 | 0.11 |
| 0.118 | 1 | 12 | 0.12 |
| 0.149 | 1 | 13 | 0.13 |
| 0.155 | 1 | 14 | 0.14 |
| 0.167 | 1 | 15 | 0.15 |
| 0.17 | 1 | 16 | 0.16 |
| 0.202 | 2 | 18 | 0.18 |
| 0.207 | 1 | 19 | 0.19 |
| 0.216 | 1 | 20 | 0.2 |
| 0.255 | 1 | 21 | 0.21 |
| 0.262 | 1 | 22 | 0.22 |
| 0.269 | 1 | 23 | 0.23 |
| 0.281 | 1 | 24 | 0.24 |
| 0.293 | 1 | 25 | 0.25 |
| 0.301 | 1 | 26 | 0.26 |
| 0.303 | 1 | 27 | 0.27 |
| 0.311 | 1 | 28 | 0.28 |
| 0.312 | 1 | 29 | 0.29 |
| 0.318 | 1 | 30 | 0.3 |
| 0.321 | 1 | 31 | 0.31 |
| 0.332 | 1 | 32 | 0.32 |
| 0.337 | 1 | 33 | 0.33 |
| 0.341 | 1 | 34 | 0.34 |
| 0.345 | 1 | 35 | 0.35 |
| 0.355 | 1 | 36 | 0.36 |
| 0.392 | 1 | 37 | 0.37 |
| 0.409 | 1 | 38 | 0.38 |
| 0.422 | 1 | 39 | 0.39 |
| 0.424 | 1 | 40 | 0.4 |
| 0.428 | 1 | 41 | 0.41 |
| 0.433 | 1 | 42 | 0.42 |
| 0.441 | 1 | 43 | 0.43 |
| 0.49 | 1 | 44 | 0.44 |
| 0.501 | 1 | 45 | 0.45 |
| 0.505 | 1 | 46 | 0.46 |
| 0.524 | 1 | 47 | 0.47 |
| 0.534 | 1 | 48 | 0.48 |
| 0.547 | 1 | 49 | 0.49 |
| 0.552 | 1 | 50 | 0.5 |

| F | n | F kum | Prob Kum |
|---|---|---|---|
| 0.555 | 1 | 51 | 0.51 |
| 0.599 | 1 | 52 | 0.52 |
| 0.604 | 1 | 53 | 0.53 |
| 0.631 | 1 | 54 | 0.54 |
| 0.633 | 1 | 55 | 0.55 |
| 0.656 | 1 | 56 | 0.56 |
| 0.661 | 1 | 57 | 0.57 |
| 0.665 | 1 | 58 | 0.58 |
| 0.666 | 1 | 59 | 0.59 |
| 0.671 | 1 | 60 | 0.6 |
| 0.677 | 1 | 61 | 0.61 |
| 0.706 | 1 | 62 | 0.62 |
| 0.71 | 1 | 63 | 0.63 |
| 0.717 | 1 | 64 | 0.64 |
| 0.718 | 1 | 65 | 0.65 |
| 0.732 | 1 | 66 | 0.66 |
| 0.779 | 1 | 67 | 0.67 |
| 0.78 | 1 | 68 | 0.68 |
| 0.794 | 1 | 69 | 0.69 |
| 0.798 | 1 | 70 | 0.7 |
| 0.814 | 1 | 71 | 0.71 |
| 0.819 | 1 | 72 | 0.72 |
| 0.821 | 1 | 73 | 0.73 |
| 0.828 | 1 | 74 | 0.74 |
| 0.831 | 3 | 77 | 0.77 |
| 0.84 | 1 | 78 | 0.78 |
| 0.846 | 1 | 79 | 0.79 |
| 0.848 | 1 | 80 | 0.8 |
| 0.858 | 1 | 81 | 0.81 |
| 0.859 | 1 | 82 | 0.82 |
| 0.863 | 1 | 83 | 0.83 |
| 0.874 | 1 | 84 | 0.84 |
| 0.879 | 1 | 85 | 0.85 |
| 0.885 | 1 | 86 | 0.86 |
| 0.904 | 1 | 87 | 0.87 |
| 0.908 | 1 | 88 | 0.88 |
| 0.911 | 1 | 89 | 0.89 |
| 0.934 | 1 | 90 | 0.9 |
| 0.936 | 1 | 91 | 0.91 |
| 0.939 | 1 | 92 | 0.92 |
| 0.948 | 1 | 93 | 0.93 |
| 0.949 | 1 | 94 | 0.94 |
| 0.953 | 1 | 95 | 0.95 |
| 0.956 | 1 | 96 | 0.96 |
| 0.965 | 1 | 97 | 0.97 |
| 0.975 | 1 | 98 | 0.98 |
| 0.994 | 1 | 99 | 0.99 |
| 0.995 | 1 | 100 | 1 |

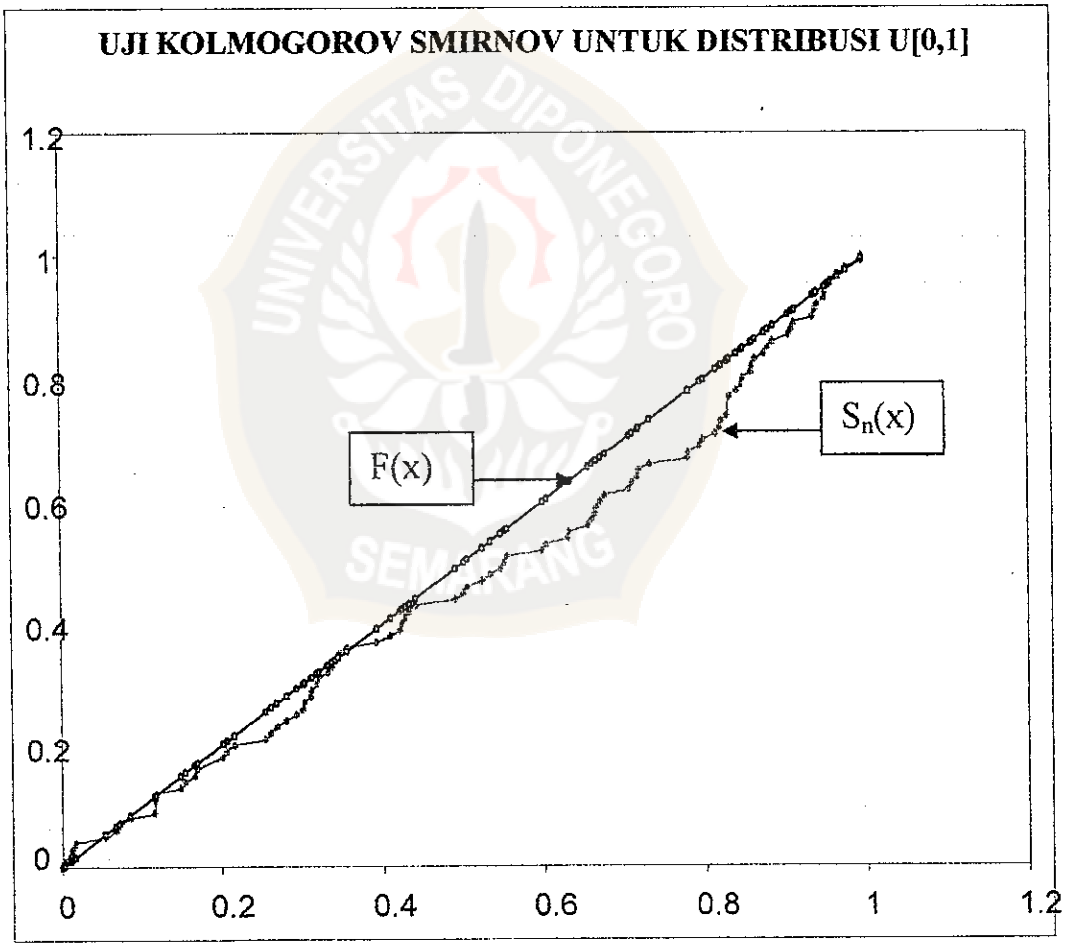
Distribusi teoritis dari U[0,1]

| F | Prob(b) | Uniform(c) | abs(b-c) |
|---|---|---|---|
| 0 | 0 | 0 | 0 |
| 0.002 | 0.01 | 0.002 | 0.008 |
| 0.01 | 0.02 | 0.01 | 0.01 |
| 0.012 | 0.03 | 0.012 | 0.018 |
| 0.016 | 0.04 | 0.016 | 0.024 |
| 0.054 | 0.05 | 0.054 | 0.004 |
| 0.067 | 0.06 | 0.067 | 0.007 |
| 0.071 | 0.07 | 0.071 | 0.001 |
| 0.085 | 0.08 | 0.085 | 0.005 |
| 0.116 | 0.09 | 0.116 | 0.026 |
| 0.117 | 0.11 | 0.117 | 0.007 |
| 0.118 | 0.12 | 0.118 | 0.002 |
| 0.149 | 0.13 | 0.149 | 0.019 |
| 0.155 | 0.14 | 0.155 | 0.015 |
| 0.167 | 0.15 | 0.167 | 0.017 |
| 0.17 | 0.16 | 0.17 | 0.01 |
| 0.202 | 0.18 | 0.202 | 0.022 |
| 0.207 | 0.19 | 0.207 | 0.017 |
| 0.216 | 0.2 | 0.216 | 0.016 |
| 0.255 | 0.21 | 0.255 | 0.045 |
| 0.262 | 0.22 | 0.262 | 0.042 |
| 0.269 | 0.23 | 0.269 | 0.039 |
| 0.281 | 0.24 | 0.281 | 0.041 |
| 0.293 | 0.25 | 0.293 | 0.043 |
| 0.301 | 0.26 | 0.301 | 0.041 |
| 0.303 | 0.27 | 0.303 | 0.033 |
| 0.311 | 0.28 | 0.311 | 0.031 |
| 0.312 | 0.29 | 0.312 | 0.022 |
| 0.318 | 0.3 | 0.318 | 0.018 |
| 0.321 | 0.31 | 0.321 | 0.011 |
| 0.332 | 0.32 | 0.332 | 0.012 |
| 0.337 | 0.33 | 0.337 | 0.007 |
| 0.341 | 0.34 | 0.341 | 0.001 |
| 0.345 | 0.35 | 0.345 | 0.005 |
| 0.355 | 0.36 | 0.355 | 0.005 |
| 0.392 | 0.37 | 0.392 | 0.022 |
| 0.409 | 0.38 | 0.409 | 0.029 |
| 0.422 | 0.39 | 0.422 | 0.032 |
| 0.424 | 0.4 | 0.424 | 0.024 |
| 0.428 | 0.41 | 0.428 | 0.018 |
| 0.433 | 0.42 | 0.433 | 0.013 |
| 0.441 | 0.43 | 0.441 | 0.011 |
| 0.49 | 0.44 | 0.49 | 0.05 |
| 0.501 | 0.45 | 0.501 | 0.051 |

| F | prob | uniform | abs(b-c) |
|---|---|---|---|
| 0.552 | 0.5 | 0.552 | 0.052 |
| 0.555 | 0.51 | 0.555 | 0.045 |
| 0.599 | 0.52 | 0.599 | 0.079 |
| 0.604 | 0.53 | 0.604 | 0.074 |
| 0.631 | 0.54 | 0.631 | 0.091 |
| 0.633 | 0.55 | 0.633 | 0.083 |
| 0.656 | 0.56 | 0.656 | 0.096 |
| 0.661 | 0.57 | 0.661 | 0.091 |
| 0.665 | 0.58 | 0.665 | 0.085 |
| 0.666 | 0.59 | 0.666 | 0.076 |
| 0.671 | 0.6 | 0.671 | 0.071 |
| 0.677 | 0.61 | 0.677 | 0.067 |
| 0.706 | 0.62 | 0.706 | 0.086 |
| 0.71 | 0.63 | 0.71 | 0.08 |
| 0.717 | 0.64 | 0.717 | 0.077 |
| 0.718 | 0.65 | 0.718 | 0.068 |
| 0.732 | 0.66 | 0.732 | 0.072 |
| 0.779 | 0.67 | 0.779 | 0.109 |
| 0.78 | 0.68 | 0.78 | 0.1 |
| 0.794 | 0.69 | 0.794 | 0.104 |
| 0.798 | 0.7 | 0.798 | 0.098 |
| 0.814 | 0.71 | 0.814 | 0.104 |
| 0.819 | 0.72 | 0.819 | 0.099 |
| 0.821 | 0.73 | 0.821 | 0.091 |
| 0.828 | 0.74 | 0.828 | 0.088 |
| 0.831 | 0.77 | 0.831 | 0.061 |
| 0.84 | 0.78 | 0.84 | 0.06 |
| 0.846 | 0.79 | 0.846 | 0.056 |
| 0.848 | 0.8 | 0.848 | 0.048 |
| 0.858 | 0.81 | 0.858 | 0.048 |
| 0.859 | 0.82 | 0.859 | 0.039 |
| 0.863 | 0.83 | 0.863 | 0.033 |
| 0.874 | 0.84 | 0.874 | 0.034 |
| 0.879 | 0.85 | 0.879 | 0.029 |
| 0.885 | 0.86 | 0.885 | 0.025 |
| 0.904 | 0.87 | 0.904 | 0.034 |
| 0.908 | 0.88 | 0.908 | 0.028 |
| 0.911 | 0.89 | 0.911 | 0.021 |
| 0.934 | 0.9 | 0.934 | 0.034 |
| 0.936 | 0.91 | 0.936 | 0.026 |
| 0.939 | 0.92 | 0.939 | 0.019 |
| 0.948 | 0.93 | 0.948 | 0.018 |
| 0.949 | 0.94 | 0.949 | 0.009 |
| 0.953 | 0.95 | 0.953 | 0.003 |

| | | | |
|---|---|---|---|
| 0.505 | 0.46 | 0.505 | 0.045 |
| 0.524 | 0.47 | 0.524 | 0.054 |
| 0.534 | 0.48 | 0.534 | 0.054 |
| 0.547 | 0.49 | 0.547 | 0.057 |

| | | | |
|---|---|---|---|
| 0.956 | 0.96 | 0.956 | 0.004 |
| 0.965 | 0.97 | 0.965 | 0.005 |
| 0.975 | 0.98 | 0.975 | 0.005 |
| 0.994 | 0.99 | 0.994 | 0.004 |
| 0.995 | 1 | 0.995 | 0.005 |



# Lampiran 9. Nilai kritis dari D dalam uji Kolmogorov Smirnov

| Uji dua-arah, $\alpha$ = | .20 | .10 | .05 | .02 | .01 |
|---|---|---|---|---|---|
| $n$ = 1 | .900 | .950 | .975 | .990 | .995 |
| 2 | .684 | .776 | .842 | .900 | .929 |
| 3 | .565 | .636 | .708 | .785 | .829 |
| 4 | .493 | .565 | .624 | .689 | .734 |
| 5 | .447 | .509 | .563 | .627 | .669 |
| 6 | .410 | .468 | .519 | .577 | .617 |
| 7 | .381 | .436 | .483 | .538 | .576 |
| 8 | .358 | .410 | .454 | .507 | .542 |
| 9 | .339 | .387 | .430 | .480 | .513 |
| 10 | .323 | .369 | .409 | .457 | .489 |
| 11 | .308 | .352 | .391 | .437 | .468 |
| 12 | .296 | .338 | .375 | .419 | .449 |
| 13 | .285 | .325 | .361 | .404 | .432 |
| 14 | .275 | .314 | .349 | .390 | .418 |
| 15 | .266 | .304 | .338 | .377 | .404 |
| 16 | .258 | .295 | .327 | .366 | .392 |
| 17 | .250 | .286 | .318 | .355 | .381 |
| 18 | .244 | .279 | .309 | .346 | .371 |
| 19 | .237 | .271 | .301 | .337 | .361 |
| 20 | .232 | .265 | .294 | .329 | .352 |
| 21 | .226 | .259 | .287 | .321 | .344 |
| 22 | .221 | .253 | .281 | .314 | .337 |
| 23 | .216 | .247 | .275 | .307 | .330 |
| 24 | .212 | .242 | .269 | .301 | .323 |
| 25 | .208 | .238 | .264 | .295 | .317 |
| 26 | .204 | .233 | .259 | .290 | .311 |
| 27 | .200 | .229 | .254 | .284 | .305 |
| 28 | .197 | .225 | .250 | .279 | .300 |
| 29 | .193 | .221 | .246 | .275 | .295 |
| 30 | .190 | .218 | .242 | .270 | .290 |
| 31 | .187 | .214 | .238 | .266 | .285 |
| 32 | .184 | .211 | .234 | .262 | .281 |
| 33 | .182 | .208 | .231 | .258 | .277 |
| 34 | .179 | .205 | .227 | .254 | .273 |
| 35 | .177 | .202 | .224 | .251 | .269 |
| 36 | .174 | .199 | .221 | .247 | .265 |
| 37 | .172 | .196 | .218 | .244 | .262 |
| 38 | .170 | .194 | .215 | .241 | .258 |
| 39 | .168 | .191 | .213 | .238 | .255 |
| 40 | .165 | .189 | .210 | .235 | .252 |
| Hampiran bagi $n > 40$: | $\frac{1.0730}{\sqrt{n}}$ | $\frac{1.2239}{\sqrt{n}}$ | $\frac{1.3581}{\sqrt{n}}$ | $\frac{1.5174}{\sqrt{n}}$ | $\frac{1.6276}{\sqrt{n}}$ |

*Sumber:* Tabel ini disarkan dari "Table of percentage points of Kolmogorov statistics," J. Amer. Statist. Assoc., 51: 111 – 121 (1956), atas izin pengarang. L.H. Miller, dan editor.

Lampiran 10. Data Maksimum Kecepatan Angin di Pantai Utara Pulau Jawa

| Bulan | Kecepatan Angin ( m/s) |
|---|---|
| Januari | 9,44 |
| Februari | 10 |
| Maret | 6,94 |
| April | 6,67 |
| Mei | 6,39 |
| Juni | 6,11 |
| Juli | 5,83 |
| Agustus | 7,22 |
| September | 6,94 |
| Oktober | 7,5 |
| November | 4,72 |
| Desember | 11,94 |

Sumber : Badan Meteorologi dan Geofisika Semarang