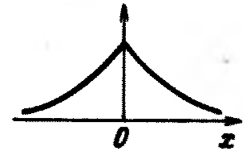
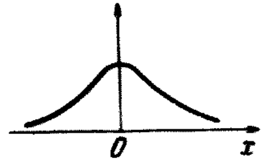
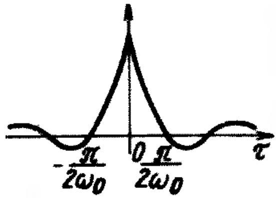
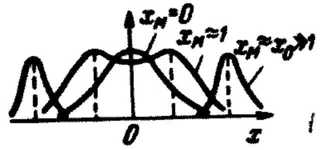
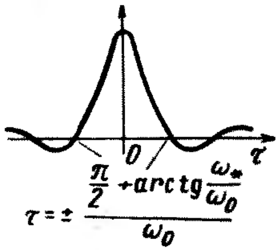
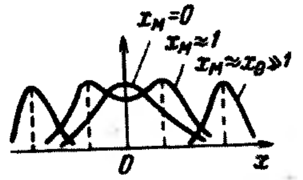
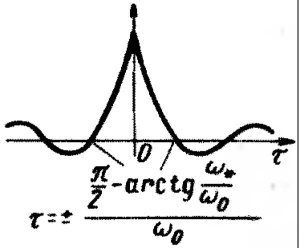
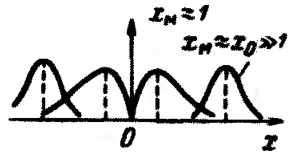
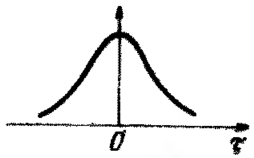
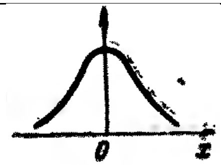
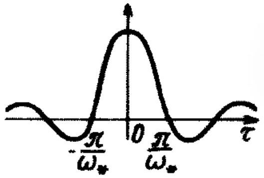
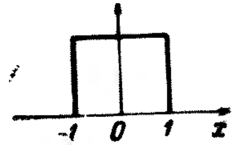
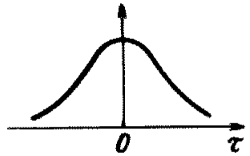
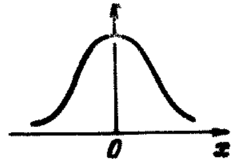
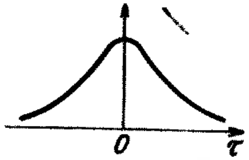
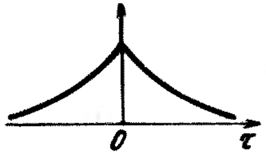
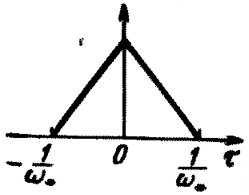
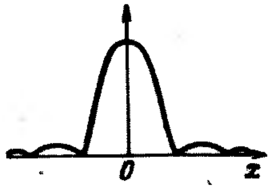
| N | Корреляционная функция R(τ) | | Энергетический спектр $G(\omega)=\int_{-\infty}^{\infty}R(\tau)e^{-j\omega\tau}d\tau$ | |
|---|---|---|---|---|
| 1 | $\sigma^2 e^{-\omega_*\lvert\tau\rvert}$ |  | $\frac{2\sigma^2}{\omega_*}\frac{1}{1+x^2}$,<br>$x=\omega/\omega_*$ |  |
| 2 | $\sigma^2 e^{-\omega_*\lvert\tau\rvert}\cos\omega_0\tau$ |  | $\frac{2\sigma^2}{\omega_*}\frac{1+x^2+x_0^2}{[1+(x+x_0)^2][1+(x-x_0)^2]}$,<br>$x=\omega/\omega_*,\ x_0=\omega_0/\omega_*$,<br>$x_M=\sqrt{2x_0\sqrt{1+x_0^2}-(1+x_0^2)}$ |  |
| 3 | $\sigma^2 e^{-\omega_*\lvert\tau\rvert}\left(\cos\omega_0\tau+\frac{\omega_*}{\omega_0}\sin\omega_0\lvert\tau\rvert\right)$ |  | $\frac{4\sigma^2}{\omega_*}\frac{1+x_0^2}{[1+(x+x_0)^2][1+(x-x_0)^2]}$,<br>$x=\omega/\omega_*,\ x_0=\omega_0/\omega_*$,<br>$x_M=\sqrt{x_0^2-1}$ |  |
| 4 | $\sigma^2 e^{-\omega_*\lvert\tau\rvert}(1+\omega_*\lvert\tau\rvert)$ |  | $\frac{4\sigma^2}{\omega_*}\frac{x^2}{[1+(x+x_0)^2][1+(x-x_0)^2]}$,<br>$x=\omega/\omega_*,\ x_0=\omega_0/\omega_*$,<br>$x_M=\sqrt{x_0^2+1}$ |  |
| 5 | $\sigma^2 e^{-\omega_*\lvert\tau\rvert}\left(\cos\omega_0\tau-\frac{\omega_*}{\omega_0}\sin\omega_0\lvert\tau\rvert\right)$ |  | $\frac{4\sigma^2}{\omega_*}\frac{1}{(1+x^2)^2}$<br>$x=\omega/\omega_*$ |  |

| N | Корреляционная функция R(τ) | | Энергетический спектр $G(\omega)=\int_{-\infty}^{\infty} R(\tau)\, e^{-j\omega\tau} d\tau$ | |
|---|---|---|---|---|
| 6 | $\sigma^2 \frac{\sin \omega_* \tau}{\omega_* \tau}$ |  | $\begin{cases} \frac{\pi\sigma^2}{\omega_*}, & \lvert x \rvert \leqslant 1, \\ 0, & \lvert x \rvert > 1, \end{cases} \quad x=\frac{\omega}{\omega_*}$ |  |
| 7 | $\sigma^2 e^{-\omega_*^2 \tau^2}$ |  | $\frac{\sqrt{\pi}\sigma^2}{\omega_*} e^{-x^2/4}, \; x=\omega/\omega_*$ |  |
| 8 | $\frac{\sigma^2}{1+\omega_*^2\tau^2}$ |  | $\frac{\pi\sigma^2}{\omega_*} e^{-\lvert x \rvert}, \; x=\frac{\omega}{\omega_*}$ |  |
| 9 | $\begin{cases} \sigma^2(1-\omega_* \lvert \tau \rvert), & \lvert \tau \rvert \leqslant 1/\omega_*, \\ 0, & \lvert \tau \rvert > 1/\omega_* \end{cases}$ |  | $\frac{4\sigma^2}{\omega_*} \frac{\sin^2 x}{x^2}, \; x=\frac{\omega}{\omega_*}$ |  |

Примечание. В графе (3) $x_*$ — это те значения $x$, при которых $\frac{dG(\omega)}{d\omega}=0$.

<table>
<tr><th>N</th><th>Моделирующий алгоритм</th><th>Параметра алгоритма</th></tr>
<tr><td>1</td><td>$\xi[n] = a_0 x[n] +$<br>$+ b_1 \xi[n-1]$</td><td>$a_0 = \sigma\sqrt{1-\rho^2}$; $b_1 = \rho$; $\rho = e^{-\gamma_*}$,<br>$\gamma_* = \omega_* \Delta t$</td></tr>
<tr><td>2</td><td rowspan="3">$\xi[n] = a_0 x[n] +$<br>$+ a_1 x[n-1] + b_1 \xi[n-1] +$<br>$+ b_2 \xi[n-2]$</td><td>$a_0 = \sigma\alpha = \sigma\sqrt{(\alpha_1 \pm \sqrt{\alpha_1^2 - 4\alpha_0^2})/2}$; $a_1 = \sigma\alpha_0/\alpha$;<br>$b_1 = 2\rho\cos\gamma_0$; $b_2 = -\rho^2$; $\alpha_0 = \rho(\rho^2-1)\cos\gamma_0$;<br>$\alpha_1 = 1-\rho^4$; $\rho = e^{-\gamma_*}$, $\gamma_* = \omega_*\Delta t$, $\gamma_0 = \omega_0\Delta t$</td></tr>
<tr><td>3</td><td>$\sigma_0 = \sigma\varkappa = \sigma\sqrt{(\alpha_1 \pm \sqrt{\alpha_1^2 - 4\alpha_0^2})/2}$; $a_1 = \sigma\alpha_0/\alpha$;<br>$b_1 = 2\rho\cos\gamma_0$; $b_2 = -\rho^2$; $\alpha_0 = \rho(\rho^2-1)\cos\gamma_0 +$<br>$+ \frac{\omega_*}{\omega_0}(1+\rho^2)\rho\sin\gamma_0$;<br>$\alpha_1 = 1-\rho^4-4\rho^2\frac{\omega_*}{\omega_0}\sin\gamma_0\cos\gamma_0$;<br>$\rho = e^{-\gamma_*}$, $\gamma_* = \omega_*\Delta t$, $\gamma_0 = \omega_0\Delta t$</td></tr>
<tr><td>4</td><td>$a_0 = \sigma\varkappa = \sigma\sqrt{(\alpha_1 \pm \sqrt{\alpha_1^2 - 4\alpha_0^2})/2}$; $a_1 = \sigma\alpha_0/\alpha$;<br>$b_1 = 2\rho\cos\gamma_0$; $b_2 = -\rho^2$; $\alpha_0 =$<br>$= \rho(\rho^2-1)\cos\gamma_0 - \frac{\omega_*}{\omega_0}(1+\rho^2)\rho\sin\gamma_0$;<br>$\alpha_1 = 1-\rho^4+4\rho^2\frac{\omega_*}{\omega_0}\sin\gamma_0\cos\gamma_0$;<br>$\rho = e^{-\gamma_*}$, $\gamma_* = \omega_*\Delta t$, $\gamma_0 = \omega_0\Delta t$.</td></tr>
</table>

<table>
<tr><th>N</th><th>Моделирующий алгоритм</th><th>Параметра алгоритма</th></tr>
<tr><td>5</td><td></td><td>$a_0 = \sigma x = \sigma\sqrt{(\alpha_1^2 \pm \sqrt{\alpha_1^2-4\alpha_0^2})/2};$<br>$a_1 = \sigma\alpha_0/\alpha;\ b_1 = 2\rho;\ b_2 = -\rho^2;$<br>$\alpha_0 = \rho\ (1+\gamma_*) - \rho\ (1+\gamma_*);\ \alpha_1 = 1-4\rho^2\gamma_* - \rho^4;$<br>$\rho = e^{-\gamma_*};\ \gamma_* = \omega_*\Delta t$</td></tr>
<tr><td>6</td><td rowspan="3">$\xi\,[n] = \sum_{-p}^{p} c_k x\,[n-k]$</td><td>$c_k = \frac{\sigma}{\sqrt{\pi\gamma_*}}\,\frac{\sin\gamma_* k}{k},\ \gamma_* \leqslant \pi;$<br>$\gamma_* = \omega_*\Delta t$</td></tr>
<tr><td>7</td><td>$c_k = \frac{\sigma\sqrt{2\gamma_*}}{\sqrt[4]{\pi}}\, e^{-2\gamma_*^2 k^2},\ \gamma_* \leqslant 1/2;$<br>$\gamma_* = \omega_*\Delta t.$</td></tr>
<tr><td>8</td><td>$c_k = 2\sigma\sqrt{\frac{\gamma_*}{\pi}}\,\frac{1}{1+4\gamma_*^2k^2},\ \gamma_* \leqslant 1/2;$<br>$\gamma_* = \omega_*\Delta t$</td></tr>
<tr><td>9</td><td>$\xi\,[n] = c_0\sum_{k=0}^{N-1} x\,[n-k]$</td><td>$c_0 = \frac{\sigma}{\sqrt{N}};\ N = \left[\frac{1}{\gamma_*}\right] + 1;$<br>$\left[\frac{1}{\gamma_*}\right]$ — целая часть числа $\frac{1}{\gamma_*}$, $\gamma_* = \omega_*\Delta t.$</td></tr>
</table>