

# ПРИЛОЖЕНИЕ

$$data := \begin{pmatrix} -20 & -18 & -16 & -14 & -12 & -10 & -8 & -6 & -4 & -2 & 0 & 3 & 6 & 9 & 12 & 15 & 18 & 21 & 24 & 27 & 30 \\ -103 & -102 & -99 & -95 & -90 & -83 & -75 & -60 & -41 & -20 & 0 & 19 & 35 & 50 & 61 & 70 & 75.5 & 79 & 80.5 & 81.4 & 81.9 \\ -95 & -93 & -88 & -81 & -73 & -63 & -50 & -35 & -20 & -2 & 0 & 3 & 10 & 18 & 30 & 48 & 68 & 90 & 115 & 140 & 170 \\ -100 & -90 & -80 & -70 & -60 & -50 & -40 & -30 & -20 & -10 & 0 & 10 & 18 & 20 & 21 & 22 & 23 & 28 & 35 & 53 & 95 \\ -100 & -95 & -88 & -79 & -67 & -52 & -35 & -15 & -10 & -5 & 0 & 4 & 15 & 80 & 135 & 160 & 178 & 189 & 196 & 199 & 200 \\ -81.9 & -81.4 & -80.5 & -79 & -75.5 & -70 & -61 & -50 & -35 & -19 & 0 & 19 & 35 & 50 & 61 & 70 & 75.5 & 79 & 80.5 & 81.4 & 81.9 \\ -170 & -140 & -115 & -90 & -68 & -48 & -30 & -18 & -10 & -3 & 0 & 3 & 10 & 18 & 30 & 48 & 68 & 90 & 115 & 140 & 170 \\ -90 & -60 & -35 & -22 & -20 & -25 & -27 & -25 & -20 & -15 & 0 & 15 & 20 & 25 & 27 & 25 & 20 & 22 & 35 & 60 & 90 \\ -103 & -102 & -99 & -95 & -90 & -83 & -75 & -60 & -41 & -20 & 0 & 10 & 19 & 27 & 34 & 40 & 45 & 49 & 52 & 54 & 55 \\ -31 & -30 & -28 & -26 & -23 & -20 & -16 & -12 & -8 & -4 & 0 & 4 & 9 & 15 & 22 & 30 & 40 & 55 & 73 & 93 & 118 \end{pmatrix}$$

$$U := (data^T)^{\langle 0 \rangle} \quad i1 := (data^T)^{\langle 1 \rangle} \quad i2 := (data^T)^{\langle 2 \rangle} \quad i3 := (data^T)^{\langle 3 \rangle} \quad i4 := (data^T)^{\langle 4 \rangle}$$

$$i5 := (data^T)^{\langle 5 \rangle} \quad i6 := (data^T)^{\langle 6 \rangle} \quad i7 := (data^T)^{\langle 7 \rangle} \quad i8 := (data^T)^{\langle 8 \rangle} \quad i9 := (data^T)^{\langle 9 \rangle}$$

## Интерполяция ВАХ НЭ

$$u2(x) := \text{interp}(i2, U, x) \quad u4(x) := \text{interp}(i4, U, x) \quad u7(x) := \text{interp}(i7, U, x)$$

$$u3(x) := \text{interp}(i3, U, x) \quad u5(x) := \text{interp}(i5, U, x) \quad u6(x) := \text{interp}(i6, U, x)$$

$$i2(x) := \text{interp}(U, i2, x) \quad i6(x) := \text{interp}(U, i6, x) \quad i5(x) := \text{interp}(U, i5, x)$$

Paragraph 1 Characteristic a:  $u1(x) := \text{interp}(i1, U, x) \quad i1(x) := \text{interp}(U, i1, x)$

Characteristic b:  $q := 0..20 \quad Um_q := -U \cdot 20^{-q}$

$$Um^T =$$

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	-30	-27	-24	-21	-18	-15	-12	-9	-6	-3	0	2	4	6	8	10

$$i1b_q := -i1 \cdot 20^{-q}$$

$$i1b^T =$$

	0	1	2	3	4	5	6	7	8	9	10	11	12
0	-81.9	-81.4	-80.5	-79	-75.5	-70	-61	-50	-35	-19	0	20	41

$$i1b(x) := \text{interp}(Um, i1b, x) \quad i1b(x) := \text{interp}(i1b, Um, x)$$

$$i1b'(x) := -i1(-x) \quad i1b'(x) := -i1(-x)$$

$$i1b(3) = 30.5$$

$$i1b'(3) = 30.5$$

$$i1b(10) = 1$$

$$i1b'(10) = 1$$

Characteristic c:

$$i1c(x) := \text{interp}(i1, -U, x) \quad i1n_q := i1 \cdot 20^{-q}$$

$$i1c(x) := \text{interp}(Um, i1n, x)$$

$$u1c'(x) := -u1'(x)$$

$$iu1c'(x) := iu1'(-x)$$

$$u1c'(10) = -1.579$$

$$u1c'(10) = -1.579$$

$$iu1c'(5) = -50.5$$

$$iu1c'(5) = -50.5$$

Characteristic d:

$$Un_q := U \cdot 20^{-q}$$

$$I1m_q := -I1 \cdot 20^{-q}$$

$$u1d'(x) := \text{interp}(I1m, Un, x)$$

$$iu1d'(x) := \text{interp}(U, -I1, x)$$

$$u1d'(x) := u1'(-x)$$

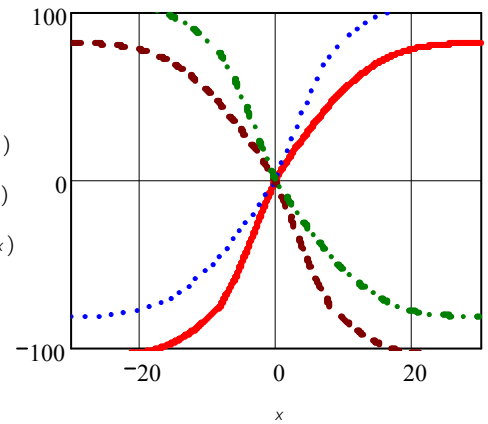
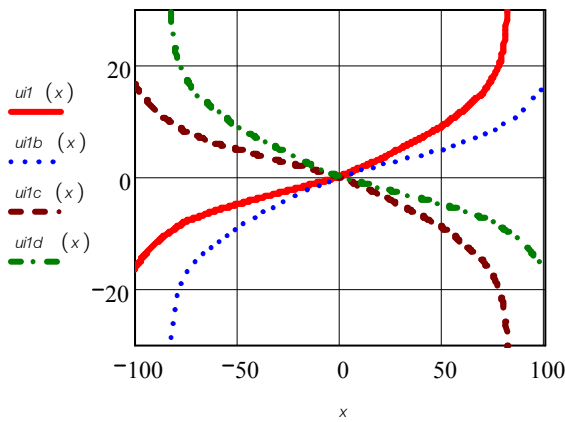
$$iu1d'(x) := -iu1'(x)$$

$$u1d'(10) = -1$$

$$u1d'(10) = -1$$

$$iu1d'(2) = -12.667$$

$$iu1d'(2) = -12.667$$



Paragraph 2

$$u(x) := u1'(x) + u1b'(x)$$

$$Iw := 2$$

$$i(x) := iu1'(x) + iu1b'(x)$$

$$u(1) = 0.516$$

$$u(-1) = -0.516$$

$$i(1) = 32.667$$

$$i(-1) = -32.667$$

Paragraph 3

$$i12(x) := iu1'(x) + iu2'(x)$$

$$I2n_q := I2 \cdot 20^{-q}$$

$$iu2c'(x) := \text{interp}(Um, I2n, x)$$

$$i12c'(x) := iu1c'(x) + iu2c'(x)$$

Conversion I(U) into U(I)

$$UU_q := -20 + q \cdot 2$$

$$UU^T =$$

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	-20	-18	-16	-14	-12	-10	-8	-6	-4	-2	0	2	4	6	8	10

$$i12_q := i12(UU_q)$$

$$i12c_q := i12c(UU_q)$$

$$i12c^T =$$

	0	1	2	3	4	5	6	7	8	9	10
0	160.5	143.5	126.5	109	91	75.667	60.333	45	29.667	14.667	0

$$IUn_q := UU \cdot 20^{-q}$$

$$I12cn_q := i12c \cdot 20^{-q}$$

$$u1(x) := \text{interp}(I12, UU, x) \quad u2(x) := \text{interp}(I12cn, UUn, x) \quad j := 10$$

$$u1(1) = 1.364 \quad u2(1) = -1.364 \quad u1(1) + u2(1) = 0$$

#### Paragraph 4

$$u12(x) := u1(x) + u2(x) \quad I2m_q := -I2 \cdot 20^{-q} \quad u2d(x) := \text{interp}(I2m, Un, x)$$

$$u12d(x) := u1d(x) + u2d(x)$$

#### Conversion U(I) into I(U)

$$I1_q := -100 + q \cdot 10$$

$$I1^T =$$

	0	1	2	3	4	5	6	7	8	9	10	11	12	13
0	-100	-90	-80	-70	-60	-50	-40	-30	-20	-10	0	10	20	30

$$U12_q := u12(I1_q) \quad U12d_q := u12d(I1_q)$$

$$I1n_q := I1 \cdot 20^{-q} \quad U12dn_q := U12d \cdot 20^{-q}$$

$$i1(x) := \text{interp}(U12, I1, x) \quad i2(x) := \text{interp}(U12dn, I1n, x) \quad j := 5$$

$$i1(1) = 6.597 \quad i2(1) = -6.597 \quad i1(1) + i2(1) = 0$$

#### Paragraph 5

$$iu12(x) := iu1(x) + iu2(x) \quad IU12_q := iu12(U_q) \quad iu12(x) := \text{interp}(IU12, U, x)$$

$$uv(x) := iu1(x) + iu12(x) \quad uv(1) = 1.471$$

$$x2 := 1 \quad i2 := iu2(x2) \quad i2 = 1 \quad xv := 7 \quad uv(xv) = 2.06$$

$$x1 := xv - i2 \quad x1 = 6 \quad U1 := uv(xv) - x2 \quad U1 = 1.06$$

$$data := \begin{pmatrix} 0 & 1 & 1.06 & 1.312 & 1.446 & 1.855 \\ 0 & 6 & 7 & 8.06 & 9.372 & 11.218 \end{pmatrix} \quad U := (data^T)^{\langle 0 \rangle} \quad j := (data^T)^{\langle 1 \rangle}$$

$$IU1(x) := \text{interp}(U, i, x) \quad IU1(x) := \text{interp}(i, U, x) \quad k := 0..5 \quad uu_k := k \cdot 0.35$$

$$iu12(x) := IU1(x) + iu2(x) \quad iu12_k := iu12(uu_k) \quad iu12(x) := \text{interp}(iu12, uu, x)$$

$$uv(x) := IU1(x) + iu12(x) \quad uv(1) = 1.545$$

$$IU1(1) = 6 \quad iu12(1) = 7 \quad IU1(7) = 1.06$$

$$iu2(1) = 1 \quad iu12(7) = 0.946$$

$$iu12^T = (0 \ 2.45 \ 4.9 \ 7.883 \ 10.322 \ 12.494)$$