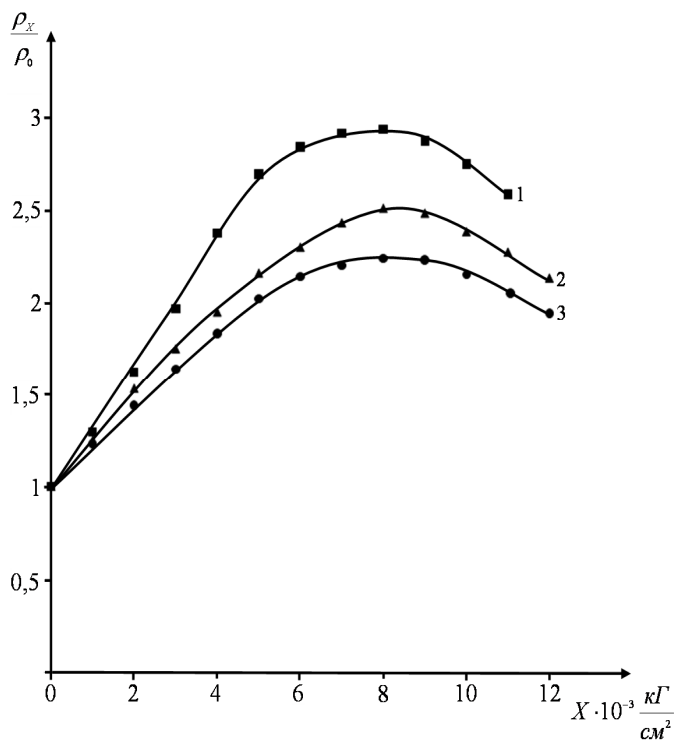


$E_c - 0,17$ $X // J // [100]$, $n - Si$ $\gamma -$ $n - Si$) [3].
 $E_c - 0,17$ $X // J // [100]$.

$$\frac{\rho_x}{\rho_0} = f(X) \quad E_c - 0,17 \quad [4].$$

$$\mu = \mu_0 \frac{\left\langle \frac{\rho_i}{\rho_{i+1}} \right\rangle^{\frac{X}{\Delta X}}}{\rho(T_0, X)}, \quad (1)$$

ρ_i, ρ_{i+1} X_i, X_{i+1} ;
 $X_i, X_{i+1} > X'$, X' $\frac{\rho_x}{\rho_0} = f(X)$; μ_0 T_0 .

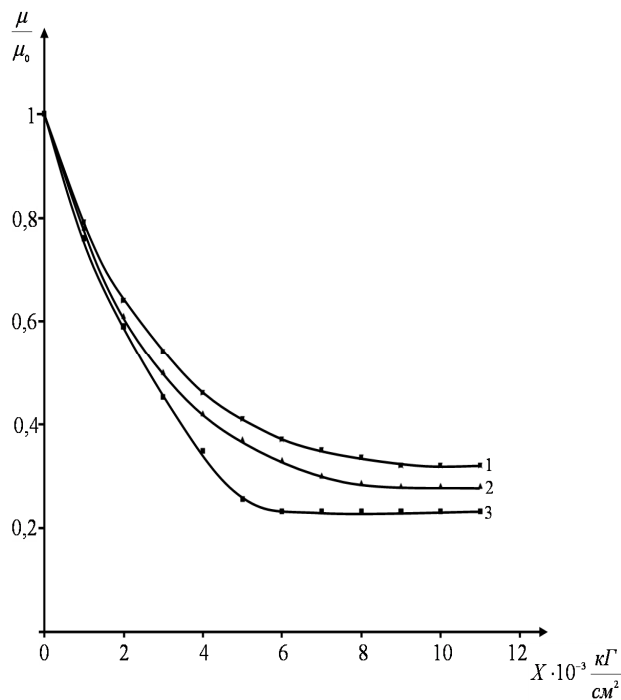


1. $\frac{\rho_x}{\rho_0} = f(X) \quad \gamma - \quad n - Si \quad 1,9 \cdot 10^{17} \frac{cm^{-3}}{2}$
 $X // J // [100], \quad T, K : 1-77; 2-110; 3-150.$

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$E_c - 0,17$

(1) $\frac{\mu}{\mu_0} = f(X)$ $n - Si$ (.2).



2. $\frac{\mu}{\mu_0} = f(X)$ $\gamma -$ $n - Si$ $1,9 \cdot 10^{17} \frac{cm^3}{cm^2}$, $T, K : 1-150; 2-110; 3-77$, $X // J // [100]$,

.2, $\frac{\mu}{\mu_0} = f(X)$ X , $n - Si$, $X // J // [100]$.

$E_c - 0,17$

$n - Si$ [6].

$\mu = \mu_{\perp} \sin^2 \theta + \mu_{\parallel} \cos^2 \theta$, (2)

$\theta -$; $\mu_{\perp} \mu_{\parallel} -$

$n - Si$ $X // [100]$ (2), :

$\mu_1 = \mu_{\parallel}, \mu_2 = \mu_{\perp}$ (3)

$n - Si$ $X // [100]$:

$\sigma_X = 2en_1(X)\mu_{\parallel} + 4en_2(X)\mu_{\perp} = en(X)\mu(X)$, (4)

$n_1(X) -$

, $n(X) -$

$$\tau_{\parallel} = \frac{a_{\parallel}}{\sqrt{k} T^{\frac{3}{2}}} \cdot \frac{x^{\frac{3}{2}}}{x^2 + b_0}, \quad \tau_{\perp} = \frac{a_{\perp}}{\sqrt{k} T^{\frac{3}{2}}} \cdot \frac{x^{\frac{3}{2}}}{x^2 + b_1}, \quad (15)$$

$$a_{\parallel} = \frac{\pi c_{11} \hbar^4}{k \Xi_d^2 \sqrt{2m_{\parallel} m_{\perp}^2}} \cdot \frac{1}{0}, \quad a_{\perp} = \frac{\pi c_{11} \hbar^4}{k \Xi_d^2 \sqrt{2m_{\parallel} m_{\perp}^2}} \cdot \frac{1}{1} \quad (16) \quad 0 = 1 + 1,645 \frac{\Xi_u}{\Xi_d} + 1,03 \frac{\Xi_u^2}{\Xi_d^2},$$

$$1_a = 1 + 0,818 \frac{\Xi_u}{\Xi_d} + 0,688 \frac{\Xi_u^2}{\Xi_d^2} \quad (17)$$

$$b_0 = \frac{a_{\parallel} 0}{\sqrt{k} T^{\frac{3}{2}} \tau_0 (kT)}, \quad b_1 = \frac{a_{\perp} 1}{\sqrt{k} T^{\frac{3}{2}} \tau_0 (kT)}, \quad (18)$$

$$\tau_0 (k T) = \frac{\sqrt{2m_{\perp}} \varepsilon_0^2 (k T)^{\frac{3}{2}}}{\pi e^4 \sqrt{m_{\parallel}}}, \quad (19)$$

$n -$, $\varepsilon_0 -$, $e -$

$$0 = \frac{3}{2\beta^3} \left[\left(\frac{\beta}{1+\beta^2} - a \right) \ln \gamma^2 - a \ln(1+\beta^2) + 2L(a) + \right.$$

$$\left. \frac{\beta \gamma^2}{2} \left(\frac{\beta^2 - 1}{\beta^2 + 1} + \frac{a(\beta^2 + 1)}{\beta} \right) \right],$$

$$1 = \frac{3}{4\beta^3} \left[((1-\beta^2)a - \beta) \ln \gamma^2 + 2(\beta^2 - 1)L(a) - \right.$$

$$\left. 2\beta^2 a - (\beta^2 - 1)a \ln(1+\beta^2) + \frac{\gamma^2}{2} (\beta(1+3\beta^2) + \right. \quad (20)$$

$$\left. a(3\beta^4 + 2\beta^2 - 1) \right]$$

$$\beta^2 = \frac{m_{\parallel} - m_{\perp}}{m_{\perp}}, \quad a = \arctg \beta, \quad L(a) = - \int_0^a \ln \cos \varphi d\varphi -$$

$$\gamma^2 = \frac{\pi \hbar^2 e^2}{2m_{\parallel} \varepsilon_0 k^2} \cdot \frac{n}{T^2 x}, \quad x = \frac{\varepsilon}{k T}.$$

$$(16) (19), \quad (18)$$

$$b_0 = \frac{nA}{\Xi_d^2 0}, \quad b_1 = \frac{nA}{\Xi_d^2 1}, \quad (21)$$

$$A = \frac{\pi^2 c_{11} \hbar^4 e^4}{2k^3 m_{\perp}^2 T^3 \varepsilon_0^2}.$$

(12-21), :

$$\frac{1}{0} \cdot \frac{\int_0^\infty dx \frac{x^3 e^{-x}}{x^2 + \frac{nA_0}{\Xi_d^2}}}{\int_0^\infty dx \frac{x^3 e^{-x}}{x^2 + \frac{nA_1}{\Xi_d^2}}} =$$

$$= K_m \frac{2a_2(1+2a_1) \frac{\mu(X_1)}{\mu_0} - 2a_1(1+2a_2) \frac{\mu(X_2)}{\mu_0}}{(1+2a_2) \frac{\mu(X_2)}{\mu_0} - (1+2a_1) \frac{\mu(X_1)}{\mu_0}} \quad (22)$$

(4) X :

$$\frac{d\sigma}{dX} = e\left(\mu \frac{dn}{dX} + n \frac{d\mu}{dX}\right) \quad (23)$$

$$-\frac{1}{\rho^2} \frac{d\rho}{dX} = e\left(\mu \frac{dn}{dX} + n \frac{d\mu}{dX}\right) \quad (24)$$

[9]:

$$n = n_0 e^{\frac{\Delta E}{\alpha kT}}, \quad (25)$$

ΔE - , α - , 1 2 , n_0 - .
(25),

$$\frac{d\rho}{dX} = -en\rho^2 \frac{d\mu}{dX} + \frac{\rho}{\alpha kT} \frac{d(\Delta E)}{dX}. \quad (26)$$

$$\frac{\rho_X}{\rho_0} = f(X) \quad (\cdot 1, \quad 1) \quad X = X_0,$$

$$\frac{d\rho}{dX} \Big|_{X=X_0} = 0.$$

$$\Delta E = \frac{d(\Delta E)}{dX} X \quad [9]. \quad (25) \quad (26),$$

$$\frac{\ln(en_0\mu(X_0)\rho(X_0))}{X_0} = \frac{1}{\mu(X_0)} \frac{d\mu}{dX} \Big|_{X=X_0} \quad (27)$$

$$X \geq X_0 \quad [100]$$

$n-Si$

$$\mu = \mu_{\parallel} .$$

$$\mu_{\parallel} = \frac{e}{m_{\parallel}} \langle \tau_{\parallel} \rangle, \quad (28)$$

(14-20), (27) :

$$\frac{\ln(en_0\mu(X_0)\rho(X_0))}{X_0} = \frac{1}{\mu(X_0)} \frac{\pi c_{11} \hbar^4}{(k T)^{\frac{3}{2}} \cdot \Xi_d \sqrt{2m_{\parallel} m_{\perp}^2}} \times$$

$$\times \frac{d}{dX} \left[\int_0^{\infty} dx \frac{x^3 e^{-x}}{x^2 + \frac{NA}{\Xi_d}} \right] \Big|_{X=X_0} \quad (29)$$

$$\frac{A_0 \pi_{11} e \hbar^4}{(k T)^{\frac{3}{2}} \Xi_d^4 \sqrt{2m_{\parallel}^3 m_{\perp}^2}} \times$$

$$\times \int_0^{\infty} dx \frac{x^3 e^{-x}}{\left(x^2 + \frac{A_0}{e\mu(X_0)\rho(X_0)\Xi_d} \right)^2} = e\mu^2(X_0)\rho(X_0) \quad (30)$$

(22) (30),

$$\left\{ \begin{array}{l} \Xi_u \quad \Xi_d : \\ \frac{1}{0} \cdot \frac{\int_0^{\infty} dx \frac{x^3 e^{-x}}{x^2 + \frac{nA}{\Xi_d}}}{\int_0^{\infty} dx \frac{x^3 e^{-x}}{x^2 + \frac{nA}{\Xi_d}}} = K_m \frac{2a_2(1+2a_1) \frac{\mu(X_1)}{\mu_0} - 2a_1(1+2a_2) \frac{\mu(X_2)}{\mu_0}}{(1+2a_2) \frac{\mu(X_2)}{\mu_0} - (1+2a_1) \frac{\mu(X_1)}{\mu_0}} \\ B \cdot \int_0^{\infty} dx \frac{x^3 e^{-x}}{\left(x^2 + \frac{A_0}{e\mu(X_0)\rho(X_0)\Xi_d} \right)^2} = e\mu^2(X_0)\rho(X_0), \\ B = \frac{A_0 \pi_{11} e \hbar^4}{(k T)^{\frac{3}{2}} \Xi_d^4 \sqrt{2m_{\parallel}^3 m_{\perp}^2}} \end{array} \right.$$

- 1) $\Xi_u = 9,23 \quad \Xi_d = -2,12$,
 2) $\Xi_u = -66 \quad \Xi_d = 29$.

1.

2.

3.

$$\Xi_u = 9,3 \quad , \quad (\Xi_u = 9,23 \quad) ,$$

[10],

$\gamma -$

[11].

Ξ_u ,

[10] [11]

" \emptyset - , 2012. 9 : , , " γ -
 Ξ_u Ξ_d \emptyset . - ,
Ge, GaAs, GaSb, CdSb

[12, 13]. [13],

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