

**SAMPLE ARTICLE FOR ACTA PHYSICA SLOVACA FROM KCSF15,  
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**A. First<sup>2\*</sup>, A. Second<sup>†</sup>, A. Third<sup>‡</sup>, A. Fourth<sup>3‡</sup>**

<sup>\*</sup>*First address here*

<sup>†</sup>*Second address here*

<sup>‡</sup>*Third address here*

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Here comes abstract of the paper... The manuscript should not exceed 8 pages for an invited paper, and 4 pages for a contributed paper.

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## 1 Introduction

Examples of symbolic references:

Refer to section(s) as: In Section 2.1 the matrix element ...

Section 3 is devoted to..., and Section 4...

Refer to table(s) and figure(s) as: In Tab. ??, and Fig. 1, 2, 3 you can find...

Refer to equation(s) as: From eq. (1), (2) and (3)... From (4) implies that...

Always use upright font for:

units	$[\text{g} \cdot \text{cm}^{-3}]$
differential in integration	$\int \cos x dx$
exponent e	$e^{4(x-5)}$
imaginary unit i	$e^{-i4(x-5)}$

## 2 Basics in $\sigma$ calculation on amorphous conductors (example)

### 2.1 The Matrix Elements $|U_q|$ (example)

We start with the coupling (scattering) Hamiltonian  $U$ , as it is given by the sum of overlapping potentials of single ions  $u(r - R_j)$ , multiplied by the carrier's charge ( $-e$ )

$$U(r) = -e \sum_j u(r - R_j), \quad (1)$$

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<sup>2</sup>E-mail address: a.first@mymail.com

<sup>3</sup>E-mail address: a.fourth@mymail.com

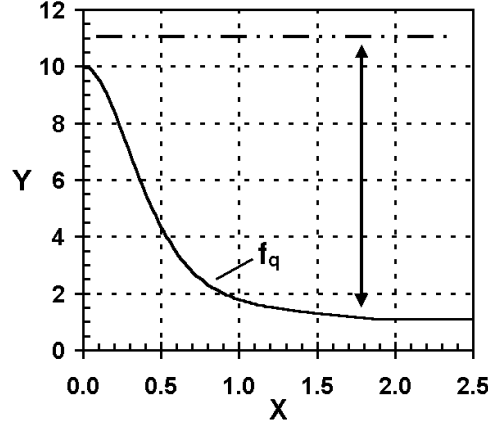


Fig. 1. Caption of figure. In eq. (3)...

where  $r$  and  $R_j$  are the carrier's and the ion's position, respectively. The matrix element  $U_q$ ,

$$U_q = \langle \Psi_{k+q} | U | \Psi_k \rangle, \quad (2)$$

with  $U = U(r)$  given by eq. (1), and with  $\Psi_{k+q}$  and  $\Psi_k$  plane waves, reads

$$U_q = \left( \frac{-e}{V} \right) \int_V \sum_j u(r - R_j) e^{-i\mathbf{q} \cdot \mathbf{r}} d^3r. \quad (3)$$

Following the Van Hove's path [9] of separating the structure-induced properties from the atom-induced properties in  $U_q$ , it is convenient to factories eq. (3) as

$$U_q = s_a(q) \cdot v(q), \quad (4)$$

where  $s_a(q)$  and  $v(q)$  are the structure-amplitude and the form-factor respectively, defined [8] by ...

### 3 Further calculations on liquid metals and conducting alloys (example)

Calculation of  $\sigma$  and  $\alpha^*$  on some other liquid metals, by applying the concept established in the preceding sections, is presented in Tab. 1. On top of Tab. 1...

The results of calculation on a series of solid amorphous alloys  $\text{Ca}_{10}\text{Mg}_{90-x}\text{Ga}_x$ , ( $x=0; 10; 15; 20; 30; 40$ ), are given in... Further investigation of conducting alloys, binary and ternary before all, can be very useful for verification of the concept exposed. Lack of measured (tabulated) structure factors  $S(q)$  in the referential literature seems to exist.

### 4 Conclusion (example)

This paper, third in sequence of papers on this subject, is devoted to detailed demonstration of  $\sigma$  calculation, in conjunction with the constitutive equation, introduced and developed in the two

Liquid metal	Li	Li	Li
$t$ [°C]	190	250	452
$\Omega$ [ $10^{-30}\text{m}^3$ ]	22.5	22.8	23.8
$(m_1/m_e)$	2.05	2.07	1.99
$k_F$ [ $10^{10}\text{m}^{-1}$ ]	1.10	1.09	1.08
$\alpha_{cal}^*$	10.0	9.67	8.74
$\rho_{cal}$ [ $10^{-8}\Omega \cdot \text{m}$ ]	23.4	23.7	22.9
$\rho_{exp}$ [ $10^{-8}\Omega \cdot \text{m}$ ]	24.	26.	34.
*	*	*	*
$k'_F$ [ $10^{10}\text{m}^{-1}$ ]	1.22	1.22	1.18
$k''_F$ [ $10^{10}\text{m}^{-1}$ ]	1.04	1.03	1.03
$(\alpha_{cal}^*)'$	0.94	1.01	1.01
$\rho'_{cal}$ [ $10^{-8}\Omega \cdot \text{m}$ ]	23.7	25.9	34.
$(k'_F - k_F)/k_F$	0.12	0.12	0.10
$q_p$ [ $10^{10}\text{m}^{-1}$ ]	2.50	2.50	2.44
$(q_p - 2k'_F)/q_p$	0.02	0.02	0.03
$DOS$	0.75	0.77	0.75
$Z_v$	1.	1.	1.

Tab. 1. The labels Li, Na, K, Rb and Cs in the top row denote Lithium, Sodium, Potassium, Rubidium and Cesium respectively. Any column comprises the set of input parameters and the corresponding values of  $\sigma$  and  $\alpha^*$  calculated by eqs...

preceding papers. The traditional interpretation of the linear response formula (Kubo formula), prescribes to calculate  $\sigma$  from parameters taken...

**Acknowledgement:** The authors are grateful to ...

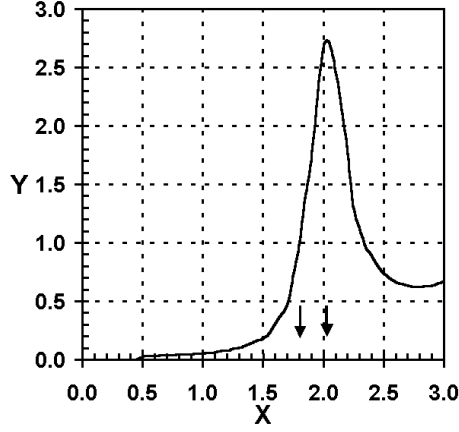


Fig. 2. Axes labeling:  $X \equiv q[10^{10}\text{m}^{-1}]$ ,  $Y \equiv S(q)$ .  $S(q)$  is the structure factor for liquid sodium Na at temperature  $t = 105^\circ\text{C}$ , measured by X-ray diffraction [13].

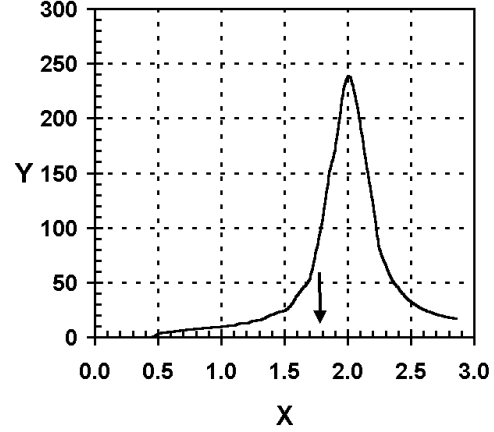


Fig. 3. Axes labeling:  $X \equiv q[10^{10}\text{m}^{-1}]$ ,  $Y \equiv S(q)v^2(q)[1.6^2 \cdot 10^{-38}\text{J}^2]$ .

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