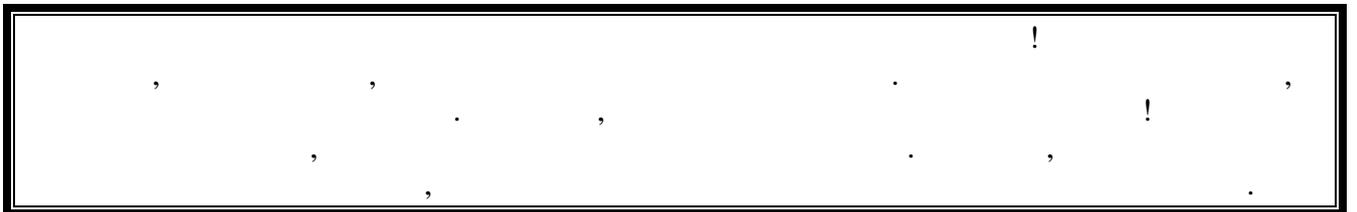




2021 .
(III)

11 .

1. .
2. , .
3. !
3. .
4. , , .
5. , , .



- :
(1 .);
- 3 (6 .);

11.1.

- « ».

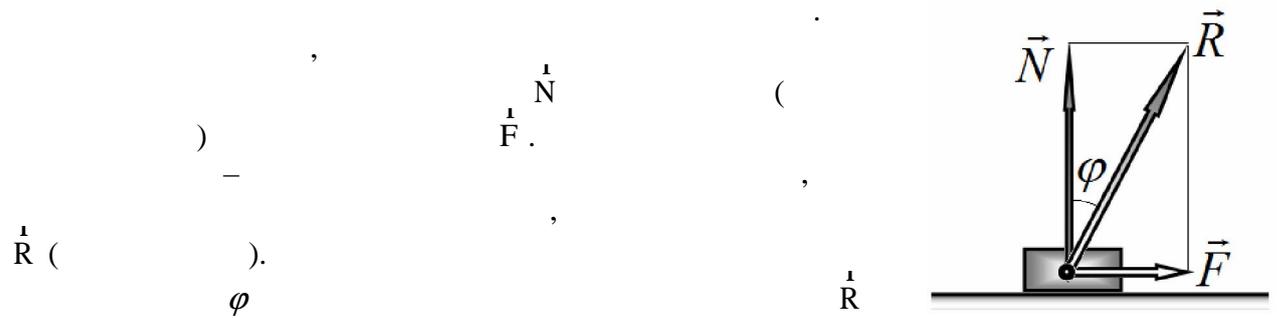
,

,

.

μ

1.

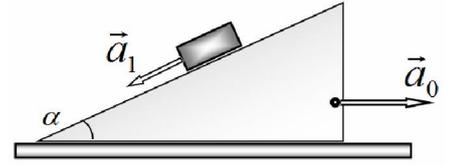


1.1	μ	φ .	\vec{N}
1.2	\vec{R}		\vec{N}
	φ .		

1.3	\vec{R}	mg ,
1.4	α_0	φ .
\vec{R} ?	?	
1.5	,	α ($\alpha > \alpha_0$).
	?	α φ .

2.

, α .
 \vec{a}_0 , .



<p>2.1 ,</p>	<p>, \vec{g}' (β , \vec{g}' \vec{g}' .</p>	<p>, α' .</p>
<p>2.2 ,</p>	<p>, \vec{a}_0, α .</p>	<p>, α' .</p>
<p>2.3 α .</p>	<p>α α_0 (α, β, φ, \vec{a}_0 .</p>	<p>.1.4). \vec{a}_0, (. .)</p>

11-2.

Ω — Ω — ()
 (, ,) .

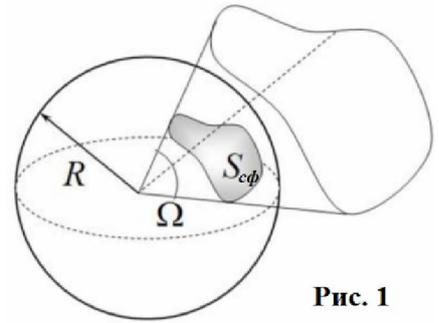


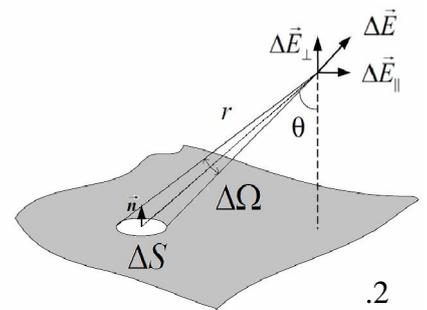
Рис. 1 () .

(.1).
 $\Omega = 1$
 4π (), R^2 .

1. « »

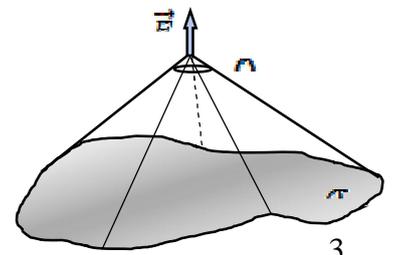
1.1 , « »
 (.2)

$$\Delta\Omega = \frac{\Delta S \cos\theta}{r^2}$$
 θ —
 \vec{n}



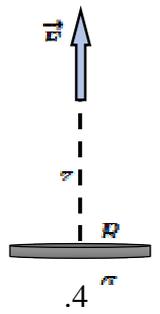
1.2 , (.3),

$$E_\perp = \frac{\sigma\Omega}{4\pi\epsilon_0}$$
 σ — , Ω —

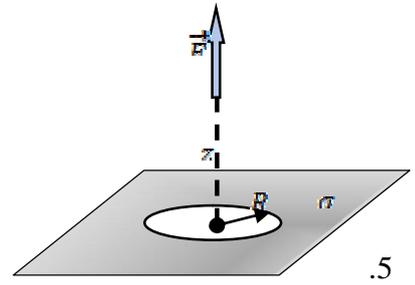


1.3 , E ,
 σ .

1.4
 (. 4)
 $z \gg R$ $z \ll R$
 $E(z)$
 σ



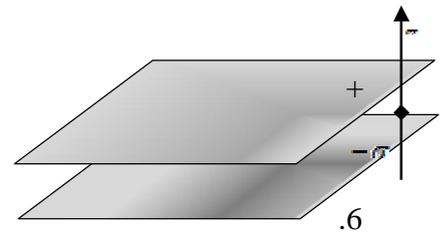
1.5
 R (. 5).
 $E(z)$
 z
 $z \gg R$
 $z \ll R$



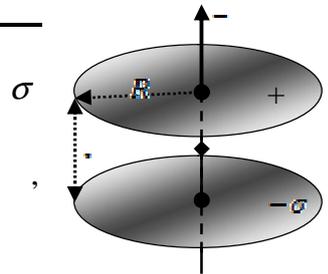
1.6
 Q m
 z

2.

2.1.
 $E(z)$
 σ



2.2.
 $E(z)$
 $z \gg R$



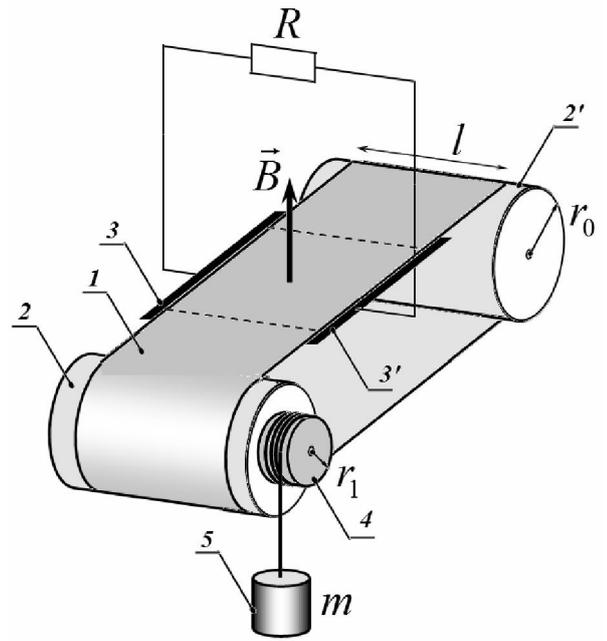
2.3.
 $z = 0$
 2.2,) $R = h$;) $R = 10h$;) $R = 100h$.

: : $\Omega = 2\pi(1 - \cos\alpha)$ α

11-3.

1.

1 2 1 2',
 r₀.
 3 3'.
 (\vec{B}),
 R.
 4 r₁.
 5 m.
 g.



(m, R, B, r₀, r₁, g).

1.1 , () ,

1.2 :

1.2.1 v₀ v;

1.2.2 \mathcal{E} I ;

1.2.3 P, ;

1.2.4 η (,).

2.

R

ϵ_0 ,

R.

2.1 , .

2.2 , .

2.3 :

2.3.1 ϵ_{0min} ,

(, $\epsilon_0 > \epsilon_{0min}$);

2.3.2 I ;

2.3.3 v ;

2.3.4 P , ;

2.3.5 η (,);