Mechanisms of the processes of shear, slice, general compression and expansion of mass

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Abstract. The analysis of the features of the physico-mechanical and physico-chemical properties of undeformed and twisted mechanical deformations of shear, compression, bending, torsion, and slice is carried out. Special attention is paid to the analysis of the processing of the qualitative state of materials, which should change when the production requirements are met and move to a new stable state in the resulting products.

1 Introduction

Types of deformation are divided into reversible (elastic) and irreversible (plastic, creep). Reversible deformations disappear after the end of the applied forces, and irreversible ones remain. Reversible deformations are based on the displacement of the atoms of the body from the equilibrium position, irreversible ones are based on irreversible movements of atoms at distances from the initial equilibrium positions (after the load is removed, reorientation occurs to a new equilibrium position). Deformation is defined as the ratio of the change in the length of a deformed object to its initial length. The deformation has no physical dimension. Types of deformation: shear, compression, crumpling, bending, torsion, slice.

2 Methods

The shift of material particles relative to each other is not accompanied by the separation and destruction of the bond between the particles, which can lengthen and shorten during the movement of individual particles without the accumulation of energy in them (plastically) or transition to a stressed state when striving for a balanced state (elastically).

When the particles are cut off from each other, the bonds disappear and their energy passes into a free state, destroying neighboring bonds or radiating into the surrounding space. These processes are mathematically inverse to each other:

\[ \varepsilon_o = A_2 m_0 \quad \text{and} \quad \varepsilon_o = \frac{h}{m_0} \]
The internal friction and adhesion of the particles prevent both shear and shear differently. This determines the occurrence of either a shift or a slice in the processes of interaction of mass particles. The occurrence of one of the two processes prevents the occurrence of the other. This is the opposite of these processes.

The general pattern—the direct proportionality of the energy level to the mass during the shift and the inverse proportionality during the cut—characterizes the influence of mass—the quantitative expression of substances—the qualitative state of substances.

With an internally balanced, stable state of a substance, its energy level $\varepsilon_0 = A_0 (\text{J/kg}) = \text{const.}$ With an increase in the mass interacting with external influences in the process, the probability of a shift increases and the probability of a cut decreases. Reducing this mass produces the opposite effect.

3 Results

Figure 1 shows that the shift occurs when the mass increases from 1 to e units of mass (the smallest value of $m$ in atomic units). At $m_0 = e$, the substance reaches the upper critical level, i.e., it is oversaturated with energy. At $m_0 = e_1$, the substance also reaches the upper critical level. Only in the first case, the upper critical level is reached during the shift, in the second during the cut. With reverse mass changes, the substance reaches the lower critical level $m_0 = 1 e$ with a shift $m_0 = e$ at the cut.

Fig. 1. The energy level of materials $\varepsilon_0 = A f (m_0)$.
The expression of the energy level of bending and torsion. These processes, under certain conditions, can compensate for each other. The very opposite processes of compression and expansion indicate the possibility of mutual compensation of these processes, leading to a stable state of mass.

The process of mass compression is accompanied by an increase in its density. The resulting more complex combined processes of axial compression, shear, and slice, considered separately from other types of resistance of materials to external influences, are combined in space and time with a general compaction and expansion of the mass. The resulting more complex combined processes of axial compression, shear, and slice are opposite processes, combined by the separation of particles from the mass decays into composite particles due to the depletion of internal energy. The separation of particles of the environment containing energy reserves should fly apart in space, colliding with each other and the surroundings, which is observed with all kinds of explosions and radiation.

For water, whose properties in physics have served to create numerous units of measurement, the upper critical level \( A \) is reached when the mass particle reaches 837.36 J and critical levels close to the experimentally obtained values that occur during the transition of water to a solid and vaporous state.

The analysis of shear and slice processes and the general expansion and compression of the mass suggests another approach to the study of the processes of resistance of materials to external influences, which act on the mass as external influences, are combined in space and time with a general compaction and expansion of the mass, retaining a constant energy accumulation by substances and radiation from them within the critical levels from the lower critical level. The upper critical level for the new energy constant gives a new, increased energy constant.

The interaction of particles with a high energy content can lead to the formation of new, stronger bonds between particles during the formation of new, more complex structures of substances with carbon atoms. The interaction of particles with a high energy content can lead to the formation of new, stronger bonds between particles during the formation of new, more complex structures of substances with carbon atoms. The interaction of particles with a high energy content can lead to the formation of new, stronger bonds between particles during the formation of new, more complex structures of substances with carbon atoms.

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The direct and inverse effect of stretching, bending, and torsion have, like the processes considered, the opposite and direct effect of stretching, bending, and torsion. These processes, under certain conditions, can compensate for each other. The very opposite processes of compression and expansion indicate the possibility of mutual compensation of these processes, leading to a stable state of mass. The resulting more complex combined processes of axial compression, shear, and slice, considered separately from other types of resistance of materials to external influences, are combined in space and time with a general compaction and expansion of the mass. The resulting more complex combined processes of axial compression, shear, and slice are opposite processes, combined by the separation of particles from the mass decays into composite particles due to the depletion of internal energy. The separation of particles of the environment containing energy reserves should fly apart in space, colliding with each other and the surroundings, which is observed with all kinds of explosions and radiation.
4 Conclusion

References

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