

The Scope of Surface Electromagnetic Waves (SEW)

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Introduction

Instrumentation

A class of new devices: Magnetic sensors, functional radio device, Active solid state MICROWAVE devices and magnitoplazmennye TWT. Known devices for surface acoustic waves (saw), widely used in practice, have drawbacks that limit their application. The devices on the SEW could complement on SAW and even replace them in the fields of microwave techniques in which saw devices do not apply. On this basis you can create devices that are in range of a few Hz to 1012 Hz, down to the infrared range. These devices are based on a single principle, blocked a broad frequency range if possible smooth frequency adjustment using a magnetic field.

Information systems

Study of surface properties of the substance, spectroscopy surface development of planar optical devices and systems for information processing [1-5].

Radar, radiocommunication and navigation

SEW studied and were found in the laboratory for gas plasma close in composition to the ionosphere of the Earth. Since the ionosphere is in the Earth's magnetic field, you should be initiated and is slow to spread on its borders, which means that the concept of an opportunity of creating new channels of global radio communications, intersatellite links, GLONASS [6-8].

Normal and over-the-horizon radar and communications

On surface electromagnetic waves could be hidden radio over the ocean at distances of thousands of miles. Radar SEW, if established, would control the vast areas of ocean surface far beyond the line of the horizon; its specifications are estimated to surpass the characteristics of existing and emerging (at the old principles) systems. Stationary systems SEW could create a solid barrier over the ocean surface electromagnetic stretching thousands of miles from the securable object height in hundreds of feet above the surface and tens of meters under the surface of the ocean. Most, however, could be offset by the most vulnerable zone is currently low and subs to the starting position.

Create a radar SEW and applying it in conjunction with existing means would realize the concept of a continuous detection of radar field along the State border.

SEW used in plasma antennas, instead of a metallic conductor is applied plasma. Plasma antenna fades when off (stops the discharge through the plasma). Non-metallic antenna invisible to radar because it does not reflect the radio waves able inactivation of plasma, easily managed, low power consumption, different technical characteristics not inferior to

traditional systems.

Aviation system to ensure take-off and landing aircraft at the expense of passing SEW on metallic (grids, films) and reinforced concrete platforms as transmission lines.

Protecting perimeters of territory: Transfer of SEW to overland, metallic (grids, foils, tapes) and reinforced concrete bars. Protection of the State border, communication (including mobile) between the border and the settlements (in hard-to-reach places-the river, marshes, forests and mountains, underground and underwater objects).

Transport (railway, Metro, tram)-transfer of SEW on Rails as transmission lines. Designing of systems (radar, communication and control) traffic security and troubleshooting transport lines during operation in any weather and at any time of the day.

Medicine-transfer by SEW blood vessels because the blood on its nature teristikam approaching sea water. Designing of systems of monitoring and diagnosis of the health status of animals and man. Treatment of skin diseases.

Surface plasmons

Under certain conditions, between light waves, aimed at border section between metal and dielectric and moving electrons on the surface of the metal resonance interaction occurs: Electrons begin to vibrate intact with the fluctuations of the electromagnetic field on metal in the resulting surface electromagnetic waves or over constitute plasmons-electron density waves that propagate along the border section like ripples on the surface of a pond, disturbed a fallen stone [9].

Nanotechnology

in optical lithography uses high resolution photoresist, projected an image of the original. Original is a perforated metal film, hole size on the order of 10 nm The original image is a picture made by methods of electron-beam lithography. Electron-beam lithography has a high resolution, but requires consistent printing (by rows, as in the TV) that for a very long time for industrial applications.

Surface waves THz frequencies are distributed in a metal film and carry information about the structure of the original (original area map). Information transfer mechanism is that the holes (heterogeneity centers rasseya) occurs the jump surface impedance and surface wave in these locations vanishes-pereizluchaetsja in the surrounding space. To an external observer (receiver) on the dark surface of the film flashes many glowing dots. If the ability to make copies of the original by using the SEW will be implemented on an industrial scale, it will significantly reduce the cost of manufacturing integrated microstructures.

Oil and gas

Transferring SEW through long-distance pipelines (land and sea) as

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transmission lines. Communication systems between the maritime oil rigs, between watchtowers and coastal targets. Control systems in the water tower on the sea surface [10].

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Conflict of Interest

Author declares there is no conflict of interest

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