THE DEVELOPMENT OF SPECIALIZED SYSTEM
FOR VISUALIZATION OF COMPUTATIONAL GRIDS

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The specialized system is intended to ensure the development of new methods for generating non-degenerate system of computational grids. Prescribed set of requirements to the system functionality, including the ability to display the cells on the edges and inside the blocks, display the individual cells and their insides, displaying nodes and the output units, showing the contents of several files (order of tens) and the ability to view the boundaries of zones, for example, two adjacent cells of the boundary layer. The program is designed to visualize the structure of the meshes and renders the mesh, written in the format TECPLOT. Supports visualization of uniform grids with hexagonal cells. As the program is implemented as a web application, then to work, you must have a web browser with support for WebGL, the Program loads the local files and network data at the address (from the Internet, supercomputer, etc.). Permissible sizes of nets and performance depend on the amount of free RAM memory and graphics card. During the development of the system's capabilities were augmented. In particular, provided a display of all grid cells, including the interior, implemented the line and plane with pseudoprotocol with a choice of colours, directions and step planes, provided transparency, and displays of faces (set of cells), provided with filtering to select the inner part of the parameters. In addition provided the possibility to show the values in the nodes color coded to indicate the node to show information about it (coordinates, numeric values, block number). The system can operate in two ways - by using the monitor and glasses virtual reality.

One of the main problems of interaction with virtual reality is the complexity or the simultaneous monitoring of the brain and the virtual space and the real. In this regard, problems can occur psychological and even physiological nature. The use of conventional input devices is often difficult. The question of the human factor in spatial orientation and navigation in structured spaces which constitute a three dimensional grid. Some ways of interacting with the environment or movement through it can be inconvenient for the user to cause severe discomfort, others distract from the task. For the case of using virtual reality is developed sign language to ensure the work management system and navigation in a virtual environment. Sign language includes the gesture to identify the object with which the user wants to interact, gestures, providing a movement in space, and the gestures work. Users of the system pointed to the necessity of the implementation of gestures, providing the turns of the grid and its parts. The implementation of sign language technology is based on motion capture (Leap Motion).