Reynolds number calculated is 199201. This implies that we have a turbulent flow. Streamline distribution (Fig. 6) [3] presents the fact that we don't have a boundary layer separation point due to the shape of the profile.

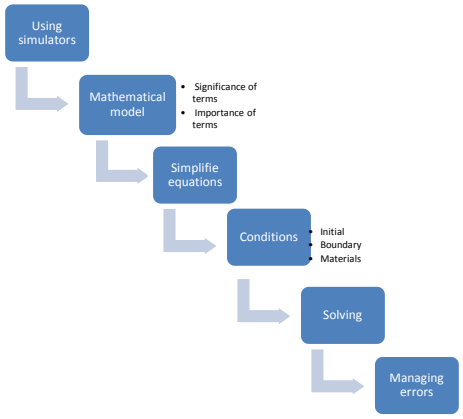

Fig. 7 Using of simulators by understanding fluid mechanics

Fluid mechanics knowledge is necessary for understanding phenomena and significance of terms, for choosing the material of the fluid (density, viscosity) and of the solid (conduits), for putting boundary conditions and, finally, for analysing the results.

In Figure 7 I synthetized the problems presented in the chapter 4. I added a very important problem which demands thorough knowledge of Fluid mechanics: managing errors (source, magnitude, solutions to reduce them, etc.).

5 Conclusion

In the education system, we have to combine CFD – Computational Fluid Mechanics with CFM – Classic Fluid Mechanics, its Mathematical model.

The purpose of this paper was to evidence the importance of Fluid mechanics in different phases of simulators' use, especially regarding maritime education.

Analysing the problem we can conclude:

- Understanding simulation means understanding Mathematical model.
- Mathematical model represents physical phenomena, but not entire, simplified.
- To simplify physical phenomena you must know the significance of terms, which terms are most important in different cases and which can be neglected. It is also important to set correctly initial and boundary conditions.
- General equations of the fluid movement, like Navier-Stokes equation, represents itself a simplified form of the natural phenomena.
- Managing errors and comparing with experimental results.
- Finally the testing method must relive both the simulators abilities and the knowledge of basic fluid mechanics.

Highlighting the contributions of the paper:

- a synthesis of the hydrodynamic forces acting on the ship;
- analysis of hydrodynamic processes on navigation simulators;
- a new approach of maritime education regarding fluid mechanics.

Learning Fluid mechanics adapted to new computational requirements as well as studying simulation technologies together with their physical models is a necessity for maritime students and not only.

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