TECHNOLOGY OF STRATIFIED MEDIA pdf

1: Methodology: Teens, Social Media & Technology

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Nevertheless, the collapse and recovery times and the fundamental period of oscillations are essentially the same as the smooth-body case. It seems that the increase of velocity from 0. Whenever the buoyant force is not sufficient to overcome the inertial force, the fluid particles are trapped in the upstream side of the body and this gives rise to an upstream wake. For an axisymmetric body, however, the question is far more complex since the fluid is free to move around the body in all directions rather than being forced to move only from the top and bottom, as in the case of a cylinder moving parallel to its axis between two walls. Nevertheless, the question is not whether there are upstream effects for axisymmetric bodies, but rather how does some measure of the magnitude of this effect vary with distance upstream from the body and whether this magnitude is of potential technological importance. The fact that there is an upstream effect for all bodies in all fluids, stratified or unstratified, is clear from the fact that a body generated by a suitable combination of hydrodynamic singularities sources, sinks, doublets and uniform flow gives rise to upstream effects, albeit small, at relatively short distances. Thus, a more appropriate question is whether there are stratification-excited mechanisms solitons, non-linear waves which lead to significantly larger signals at significantly larger distances, i. Twenty-First Symposium on Naval Hydrodynamics. The National Academies Press. One may consider linear internal waves as a possible cause of upstream effect but quickly realize that they travel at speeds slower than the prototype. According to Miles [12], internal waves generated by a horizontally moving source appear only in the lee of the source. However, unsteady motions, including impulsive starts and stops, can give rise to unsteady internal waves which propagate upstream of the generating body. Graham [13] investigated theoretically transient internal waves produced by a moving body in a stratified fluid and presented examples showing how well or how poorly the quasi-steady state is defined relative to the magnitude of fluctuations. Graham did not, however, consider the effect of a collapsing wake. However, this does not imply that other types of unsteady motions such as practical maneuvers, including sudden starts and stops, are not capable of giving rise to measurable conductivity changes far upstream of a submarine-like body. It is against this background and much unsubstantiated speculation that a series of sudden-start-stop experiments were undertaken with the clear understanding that the demonstration of an upstream effect under laboratory conditions does not necessarily imply that it will be equally observable in the ocean environment. It is quite probable that the highest speed of nonlinear internal waves or solitons, though exceeding the model speed, may fall far short of the prototype speeds even under ideal conditions. Noting that the time for each probe is measured from the time the stagnation point of the model arrives at the particular probe, it is clear that there is no notable upstream effect. Figure 15 shows similar data for three different velocities. Again, the presence of the model is felt only when the model arrives at the probe, not before. However, the larger the speed the shorter is the time of anticipation. Apparently, the nonlinear waves generated by the model are traveling at speeds larger than 0. Figure 17 shows a comparison of the impulsively and non-impulsively started runs. It must be emphasized that experiments with impulsive starts have been repeated a number of times at different initial accelerations with different mechanisms and with or without a small uniform current in order to ascertain that the observed upstream effect was not due to some anomalous phenomenon. The addition of sail planes did not materially affect the results. The individual probe data differed very little from the ensemble averaged data and the upstream effect decreased at higher speeds. These are clear indications of the fact that the observed upstream effect is a genuine hydrodynamic phenomenon, at least, in model tests. As noted earlier, however, its prototypical significance remains unclear and should be the subject of a number of judiciously conducted large scale experiments. The results have shown that the wake collapse at a distance of about diameters downstream gives rise to large conductivity changes and to many modes of short internal waves [15]. The relative conductivity is sufficiently large to cause measurable changes in the geomagnetic

field. The conductivity field ahead of the body anticipates the arrival of the body for relatively short distances and then only for impulsively-started or impulsively-stopped motions at relatively moderate speeds. As in the case of many other studies in stratified fluids, the range of the governing parameters is dictated not by technological needs but by what is achievable under the laboratory conditions. Even though the Froude numbers encountered in this investigation are the largest we have ever seen, and certainly closest to the prototypical conditions, the scale effects due to widely different model and prototype Reynolds numbers cannot be assessed and must be evaluated through prototype tests. As noted earlier, trip wires were used to render the boundary layer turbulent and, furthermore, the size of the propeller was scaled with respect to the size of the wake, and not the size of the body, by scaling wake diameter on the basis of Reynolds number. The validity of such common practices in laboratory experiments needs to be assessed through sea tests, particularly when the Reynolds numbers of the model and prototype differ by several orders of magnitude. The authors would like to thank Mr. Crow for their assistance with the construction and smooth operation of the test facilities. Fernando Arizona State University, USA This is an interesting study dealing with conductivity fluctuations in a stratified media generated by traveling disturbances. The aim is to study whether internal waves and turbulence generated by underwater vehicles, such as submarines, can be detected by using Magnetic Anomaly Detection MAD devices that sense changes in background magnetic induction. Inspection of conductivity records presented indicate that large amplitude variations of RC can be attributed to the isopycnal displacements around the body, rather than to wake signatures as proposed. In the far field, however, the conductivity variations are due to the wake, but the signal at this stage is in a decaying state and is weak. Above a certain height of the body, known as the level of the dividing streamline, the flow passes over rather than flowing around the body, and, at large Fr, the dividing streamline height becomes independent of FR Lin et al. The above estimates, however, were made by assuming that the body-generated disturbances are dominant over the propeller-generated disturbances, and scrutiny of this assumption is also in order. Page Share Cite Suggested Citation: In a classical sense, the upstream influence is defined as the initiation of upstream motions due to the pushing forward of a slug of fluid ahead of the body at the neutrally buoyant level of the slug. This influence is markedly weak for three-dimensional bodies, as the fluid particles can shunt around rather than over the body. Another important aspect that warrants attention is the generation of upstream-propagating shear waves or zero-frequency internal waves and their reflection from the end walls. These waves can also influence conductivity variations Manins[16]. In addition, the wakes can oscillate thus leading to sharp conductivity changes behind the body. This minimum, however, can also be interpreted as a consequence of the dipping of isopycnals behind the body. Most of the plots presented by the authors are ensemble averaged over several runs, concurrent with the standard practice of analyzing random signals. For practical pur-poses, however, it is also instructive to devise methods to recognize signals using single realizations. After all, in submarine detection, one has to work with a single record rather than an ensemble average! There are funda-mental differences in the wakes of towed and self-propelled bodies as clearly noted in the paper. The topology of the wakes of towed bodies of special geometries used by the discussor does not generalize to slender self-propelled body shapes. Our experiments with slender self-propelled bodies at realistic Froude numbers are the first ever reported in the literature. As far as the effect of isopycnal displacements are concerned, the model completes its passage under a probe in about 0. This, however, is a very small fraction of the time that the probes respond to the changes in the wake created by the body and the propeller. The fact that the passage of a slender self-propelled body causes large conductivity changes in an otherwise undisturbed region of a stratified medium and that these changes have a decaying harmonic character is all that is needed for the understanding and interpretation of the corresponding geomagnetic anomalies. This has not been demonstrated before. RC does not vary with N2 as evidenced from Fig. The definition of the upstream effect does not need repetition. It is a well-known fact that there are stratification-excited mechanisms solitons, nonlinear waves , which lead to significantly larger signal-amplitude to up-stream-distance ratios above the threshold noise level. The end-wall reflections have nothing to do with the issue because the upstream effect under unsteady circumstances impulsive starts, turns, dives, porpoising, etc. No two runs have ever been ensemble averaged. Our data have shown that the

ensemble-average of n-number of probe signals resulting from a single run is indistinguishable from the individual probe data for that same run. In summary, it appears that the discussor read the paper rather hastily. The topology of the wakes of towed bodies of such special geometries as right circular cylinders and spheres does not generalize to slender self-propelled bodies and to more general problems of the evolution of isolated turbulent patches in stratified fluids. Our work presents, for the first time, body geometries and measurements on both fundamental and applied levels. It is hoped that future studies in stratified flows will move toward high Re and F experiments with slender self-propelled bodies. After all, spheres and right circular cylinders do not make good submarines at any speed. The comments of the discussor gave us the opportunity to expand on several topics of scientific and practical interest and are appreciated.

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2: OSA | Electromagnetic propagation in periodic stratified media. I. General theory*

Electromagnetic Waves in Stratified Media This book [1] was written at an important point in the development of applications of electromagnetic (radio).

AmeriSpeak is a nationally representative, probability-based panel of the U. This particular survey featured interviews with 1, parents who belong to the panel and have a teen ages 13 to 17, as well as interviews with teens. Interviews were conducted online and by telephone from March 7 to April 10, The survey was conducted by NORC. The margin of sampling error is plus or minus 5. The data were weighted in a multistep process that begins with the panel base sampling weights. Panel base sampling weights for all sampled housing units are computed as the inverse of probability of selection from the NORC National Frame the sampling frame that is used to sample housing units for AmeriSpeak or address-based sample. The sample design and recruitment protocol for the AmeriSpeak Panel involves subsampling of initial nonrespondent housing units. These subsampled nonrespondent housing units are selected for an in-person follow-up. The subsample of housing units selected for the nonresponse follow-up NRFU have their panel base sampling weights inflated by the inverse of the subsampling rate. The base sampling weights are further adjusted to account for unknown eligibility and nonresponse among eligible housing units. The household-level nonresponse adjusted weights are then post-stratified to external counts for number of households obtained from the U. Then, these household-level post-stratified weights are assigned to each eligible adult in every recruited household. Furthermore, a person-level nonresponse adjustment accounts for nonresponding adults within a recruited household. The external population totals were obtained from the Current Population Survey. The weights adjusted to the external population totals are the final panel weights. Study-specific base sampling weights are derived using a combination of the final panel weight and the probability of selection associated with the sampled panel member. Since not all sampled panel members respond to the survey interview, an adjustment is needed to account for and adjust for survey nonrespondents. This adjustment decreases potential nonresponse bias associated with sampled panel members who did not complete the survey interview for the study. Thus, the nonresponse-adjusted survey weights for the study were adjusted via a raking ratio method to general population totals associated with the following socio-demographic characteristics: The weights adjusted to the March Current Population Survey population totals are the final study weights, which were used to produce the estimates in this report. Sample sizes and sampling errors for key subgroups are as follows: In addition to sampling error, one should bear in mind that question wording and practical difficulties in conducting surveys can introduce error or bias into the findings of opinion polls. Pew Research Center is a nonprofit, tax-exempt c 3 organization and a subsidiary of The Pew Charitable Trusts, its primary funder.

3: Electromagnetic propagation in periodic stratified media. I. General theory - CaltechAUTHORS

California Institute of Technology, Pasadena, California (Received 8 November) The propagation of electromagnetic radiation in periodically stratified media is considered.

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V. 2. Pierce Penilesse his svpplication to the diuell, 1592. Harvey-Greene tractates, 1591-2. The history of the Hebrew nation and its literature The State Cults and the Ritual Cycle The Tree Care Primer (Brooklyn Botanic Garden All-Region Guide) Pt.10. Vocabulary and concept review The Library Of Christmas Music Living together in nature December the 27th A book in every home ed leedskalnin Childrens speech Root cause analysis fishbone Programming and problem solving with c 6th edition Simple get-togethers Embracing a complex God The mountains come close when it rains Microwave engineering and systems applications David wong this book is full of spiders Contextual effects on mortality Chapter 12: Marine Biological Diversity: Conserving Life in the Four English Vocabularies to Spell Anniversary sermon, preached at the parish church, Bradfield, Berks. July 4th, 1856 Design and modeling of millimeter-wave CMOS circuits for wireless transceivers Satire or evasion? Intercession for the faithful departed Boss me 80 manuale italiano DSM categories and dimensions in clinical and research contexts Helena Chmura Kraemer Bikini body motivation and habits guide Revisiting the role of consciousness with MOGUL Michael Sharwood Smith Psychological Trauma and the Developing Brain Places to Visit Level 3 (Early Readers from TIME For Kids (Early Readers) Wrights and privileges The Role of Reverse Auctions in Strategic Sourcing (Focus Study) Target four dollar list Gregg College Keyboarding Document Processing (GDP), Lessons 1-20, Student Text Full screen second monitor Legacies of Power Food, the chemistry of its components Dog Training Handbook, a 10-week Training Handbook On the erosion of valleys and lakes Sorting out your motives