School of Physics and Astronomy **בית הספר לפיזיקה ולאסטרונומיה**
The Raymond and Beverly Sackler
Faculty of Exact Sciences
Tel Aviv University

הפקולטה למדעים מדויקים
ע"ש ריימונד ובברלי סאקלר
אוניברסיטת תל אביב

October 6, 2019

Prof. Steven Kahn
Committee Chair
Committee for the Evaluation of Physics Departments in Israel

Dear Prof. Kahn,

As requested in the letter dated August 13, following is a table with the main comments in the report of the CHE Physics Evaluation Committee, and our responses to those comments.

We thank all committee members for the time and effort and appreciate the thorough evaluation and the useful comments.

Hereby signed:

Prof. Eyal Zisser
Vice Rector

Prof. Dan Maoz, previous Head
School of Physics and Astronomy

Prof. Erez Etzion, Head
School of Physics and Astronomy

Cc: Ms. Maria Levinson-Or, Head of Evaluation and Quality Enhancement, CHE
Ms. Molly Abramson, Coordinator, Quality Assessment Division (QAD), CHE

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Committee Recommendation	Steps towards implementation (including time table)
1. **Section 3.3:** In future would be useful to have self-evaluation process serve as vehicle for self-reflection.	We agree, but this comment should be aimed at the CHE, rather than at any of the Physics departments. The CHE provided us with a rather rigid questionnaire that we were to answer, rather than instructions for general self-reflection, etc.
2. **Section 3.4**: The department has only recently started to videotape lectures. Students are happy about the availability of online lectures but note that attendance in these lectures typically drops to around 50%. Some lecture and section materials are now available online, and the students seem to greatly benefit from them. It would be a good idea to expand this practice to other undergraduate courses.	This statement is inaccurate. Video versions of all undergraduate courses **and** sections have been available at TAU Physics for decades, usually in multiple versions (i.e. different teachers from different years) for every course. Indeed, attendance in the traditional lectures has dropped to 50-80%, but this is an indication of the success of the approach, i.e. of the large number of students who prefer this study option. Many students tell us that they take advantage of both options: they attend most lectures, but also view the videos at home, to review and clarify any uncertainties they encounter.
3. **Section 3.4**: Sections are still large, as noted in the past CHE Physics review (for example, for quantum mechanics there are only 2 Sections, with around 50 students in each).	This continues to be solely the result of TAU budget constraints. Larger allocations of TA hours by the University would alleviate the problem.
4. **Section 3.4**: Physics-math program has uneven course load...few students manage to complete this program in the designated 3 years.	True, but beyond our powers. The CHE continues to dictate that math and physics programs be limited to 3 years. We would welcome some flexibility in this CHE policy

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5. **Section 3.4:** Content of required MSc courses is an item of concern, marginal relevance to research work of many students. Students feel overly pressured to do well in these courses, some find courses difficult and time-consuming. School should consider more uniform advising to the incoming MSc students on what importance they should personally place on these courses.	We are in the process of re-evaluating the "core" MSc course and their content, to address this problem. We will try to improve the advising we provide.
6. **Section 3.4:** School might consider adopting a more organized and proactive system of advising graduate students who did not partake in undergraduate research, to help prevent them from getting "lost" at an early stage.	We will try to create a framework for assisting this population of students.
7. **Section 3.4:** Coordination between the different departments, and in particular with EE, which is in a different Faculty, could be improved, preferably by establishing a clear mechanism for resolving issues from subject matter to clashing class schedules.	The School of Physics is in continuous contact with its sister units to coordinate and solve logistical and academic issues involving the joint study programs. This is done at the levels of unit heads, teaching committees, and administrative staff.
8. **Section 3.6**: "everybody here gets tenure"... It does make sense for most faculty members to be granted tenure, given a rigorous hiring process at the junior faculty level. However, the School does not have a perfect crystal ball, and it seems unlikely to us that every junior faculty hire works out as desired 5 to 6 years later... issue should be reviewed more critically at the university level.	Not "everybody": e.g., a Physics faculty member was denied tenure 7 years ago, and a Chemistry faculty member this past year. Thus the system seems to be working reasonably well.

9. **Section 3.6**: Startup packages for experimentalist hires have been quite generous, typically ~ $2M. This puts significant financial demands on the School, which means that cost is an important factor in the evaluation of potential new hires. That is not an uncommon situation at most universities, but it does imply that the School must pay extra attention to ensure that cost considerations do not get in the way of hiring the best people.	At TAU, experimentalist startup costs are covered almost entirely by the University's VPR&D and President, and therefore cost has not been a consideration in hiring decisions at the level of the School of Physics in recent years.
10. **Section 3.7**: TAU approach to biophysics is rather conservative...pursued as merely an extension of condensed matter physics....At TAU, physicists working on more general topics are not in the School of Physics...The potentially adverse effects can be mitigated through contact with physicists in other units of the university.	There is, in fact, much active collaboration between members of the School of Physics and members of other units (Medicine, Life Sciences, Chemistry, Engineering) who are trained physicists (often graduates of our School). Furthermore, a significant fraction of Physics graduate students (i.e. students who obtain degrees in Physics), including many of our best students, have thesis advisors from these sister units, either jointly with advisors from Physics or (often) as sole advisors. This provides another link between the School and those researchers.
11. **Section 3.8**: Improvements can be made so all students are aware of vehicles in place to communicate concerns they may have to management. We recommend an unbiased and rigorous process be established to evaluate the climate for graduate students in the School.	We will act to create such a feedback mechanism for the graduate students.
12. **Section 4:** School should endeavor to maintain a more frequent and organized interaction with	We agree, and have taken steps in this direction, e.g. have setup and regularly

alumni...utilize social media to enable alumni to stay in contact with one another, with School.	update a School Facebook page with news and events.
13. **Section 4:** Attention to diversity: School should examine processes for recruiting new women faculty. The School should also develop plan to improve representation of Arabs, ultra-orthodox, at all levels.	We will continue to actively seek ways to increase the numbers of our female faculty, and hopefully continue the success rate of last 4 years, in which we went from 2 to 6 women faculty members. We continue also our targeted efforts to recruit Arab students, e.g. through special sessions in Open Days in Arabic led by existing Arab students. The ultra-orthodox sector is a more complex problem, given that young ultraorthodox men lack a "core-subject" high-school education (Math, Physics, English) needed for Physics studies, while young women from the sector, in addition to the traditional reticence of girls from Physics, often seek professions viewed as more conducive to secure employment and wage earning.
14. **Section 4**: School should undertake investigation of alternative teaching methods.	Apart from videos of all lectures and sections, in which our School has been a pioneer, and the recent replacement of the computer programming lectures with an online course, our faculty as a whole believe that traditional blackboard lectures and recitations are proven methods to teach exact sciences which can not be simply replaced by alternative methods (smart boards, discussion groups, online courses).
15. **Section 4**: Reevaluation of the structure of the School: We found some evidence that the organization of the School into three Departments may create obstacles to full consideration of candidates in new emerging areas. We suggest that the School undertake a self-evaluation of	This statement is at odds with previous statements in the report (e.g. Section 3.2: "...we saw no real evidence of this extra inertia, and in fact the young faculty hired over the last few years apparently do not really need to fit into the structure outlined above.") that the organizational structure is not a problem, as evidenced, e.g. by the

that structure to see if it is still optimal.	attempts to hire quantum information people, the attempt to hire a LIGO gravitational wave quantum optics detector scientist, the hiring of Ishay Pomerantz and the building of his high-intensity laser lab for nuclear and material science research, and so on. We are therefore not aware of the said obstacles. Nonetheless, we do intend to continue re-evaluating the organizational structure of the School.
16. **Section 4:** Monitoring of graduate student performance: suggest more formal process for monitoring graduate student progress, after approval of research proposal and before submission of thesis... monitoring committees with multiple faculty members... helpful in avoiding problems between a student and advisor, students will also benefit career-wise by having more than one faculty member intimately familiar with their work.	We agree with this recommendation. We have already had discussions about this in our last Physics faculty meeting, and we will implement such a monitoring framework during this school year.
17. **Section 4**: Hiring in quantum information science: committee endorses the desire of the School to make new experimental hires in quantum information science....understands the difficulties given competition...suggests concerted effort to examine non-Israeli candidates. More proactive consideration of how to hire international faculty.	We have in fact, over the past year, advertised internationally and considered non-Israeli candidates. We will continue to do so.