March 26, 2014

Dear All,

We want to thank you again for agreeing to contribute to **Advanced Interferometric Gravitational-wave Detectors**. We're delighted that you've agreed to dedicate your time and expertise to putting together what we hope will be the definitive work on ground-based GW detectors for some time to come.

As we indicated in the proposal, the book is planned for two volumes. Volume 1 covers 'Essential Features of Gravitational-wave Interferometric Detectors' and is intended to lay the groundwork for detectors by introducing gravitational wave interferometry and providing the essential aspects of the wide range of physics and enabling technologies needed to understand gravitational-wave interferometers. Volume 2 is intended to provide a more detailed picture of the major subsystems of advanced interferometers, how those subsystems are integrated as a whole, and also highlight emerging developments for future generation gravitational-wave interferometers. Although we are still in discussions with a few authors, a list of chapters and authors as they currently stand is appended to the end of this note.

There are a few deadlines that we need to make you aware of. First, we would like to get an outline of everyone's chapter by no later than **May 1, 2014**. In addition to giving us an idea of each chapter's contents, the outline will allow us to compare content across different chapters, get a sense of how the chapters will tie together, and look for areas of overlap as well as topics that aren't adequately covered. No more than a page is needed for the outline, although more is certainly welcome. And of course we encourage you to discuss plans for your chapters with other authors as you plan your contributions

The deadline for receiving the first draft of the chapters is **Jan 1, 2015** (and of course sooner is better!). After receiving the first drafts, we expect to iterate with everyone at least once (and perhaps more than once) on needed revisions. Final drafts are due to us by **May 31, 2015**. The final submission date for the entire manuscript to World Scientific is **August 31, 2015.**

We will be using LaTex2e to produce the text of the book. The attached zip file 'ws-bk975x65_2e' includes everything needed to generate text. You will use one of the 'chapter' Latex files, eg 'chapter1.tex', to produce your chapter, and keep in mind that chapters are each supposed to be 20 pages including figures. The file 'bk-readme975x65_2e' provides details on the World Scientific style/template document for Latex2e (particularly note the 'Getting Help' section at the end of the document), and 'bk-instruction975x65_2e' gives general instructions for authors.

A couple of important notes on graphics -- all figures will need to be in gray scale. The cost of color production is prohibitive, so no color figures or graphs will be used. And, very important, if you are planning to use figures that have already appeared in print in journals (or in other copyrighted venues), you will need to obtain written permission for usage before the figures can be published in this work.

Don't hesitate to get in touch with us if you have any questions. And again, thanks for contributing and we look forward to working with you!

With Best Wishes,

Peter and Dave

Volume I: Essential Features of Gravitational Wave Detectors

Gravitational waves and their interactions with detectors
        1. basic physics, and the challenge of small signals (Weiss)
        2. details of ifo configuration and response (Kawamura)
        3. global detector networks (Branchesi, Whitcomb)

Noise sources
        4. shot noise/quantum noise (McClelland)
        5. thermal noise (Rowan)
        6. seismic noise and GGN (van den Brand)
        7. how to think about and control non-fundamental noise sources (Ballmer)

Enabling Technologies for Gravitational Wave Detectors
        8. control systems (Evans)
        9. cavity optics: longitudinal modes, higher order modes, stability (Barsuglia, Ando)
        10. fused silica / mirrors / coatings (Harry)
        11. EO components / photodiodes (Quetschke)
        12. digital control, data acquisition, special electronics, computing (TBD)
        13. vacuum technology (Zucker)
        14. lasers (Munch)
        15. diagnostic methods: math ideas, implementation methods, success stories (Gonzalez, Robinet, Smith)

Volume II: Advanced LIGO, Advanced Virgo and beyond

Detector subsystems
        16. Seismic Isolation, both aLIGO style and Virgo style (Losurdo, Lantz)
        17. Test mass suspensions (Robertson)
        18. Pre-stabilized lasers (Willke)
        19. Input mode cleaners and associated input optics (Mueller, Genin)
        20. Angular sensing and control (Barsotti)
        21. Length sensing and control (Grote)
        22. Thermal compensation systems (Brooks)

Realizing a complete detector
        23. System design and trade-offs: several examples (Fritschel)
        24. Planning, organizing, execution (Shoemaker)
        25. Integrated detector commissioning (Adhikari)

Future detectors
        26. Ideas for 2.5 gen, 3rd gen detectors (Punturo)
        27. Cryogenic interferometry (Kuroda)