

P&P Technical Committee Meeting

In Chicago IL and on Zoom
9 May 2023

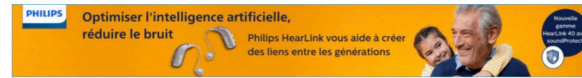
Chair: Virginia (Gin) Best
Boston University
ginbest@bu.edu

<https://tcppasa.org/>



Dr. Christian Füllgrabe, Associate Professor Audiological Sciences, UCL Ear Institute

AUDIOLOGIE
DEMAIN



L'ACTUALITÉ

MÉTIERS

POLITIQUE DE SANTÉ

ÉCHOS DES SCIENCES

ÉCHAPPÉES

DOSSIERS

À LA UNE



(c) DR

« Entre audition et
cognition, le lien est
complexe »

Perception of the envelope-beat frequency of inharmonic complex temporal envelopes

Christian Füllgrabe^{a)} and Christian Lorenzi^{b)}

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(Received 18 June 2004; revised 19 September 2005; accepted 19 September 2005)

Listeners can hear slow sinusoidal variations in the depth of (SAM) stimuli. Here, the SAM stimulus of frequency f_m acts as a carrier in depth of frequency f'_m (referred to as “second-order” amplitude modulation in the temporal envelope. Recent studies have suggested that perception is based on a modulation-distortion component or the envelope of the ac-coupled Hilbert envelope), both occurring at the envelope frequency. This was tested by transposing to the modulation domain the matching experiment of [J. Acoust. Soc. Am. **34**, 1418–1424 (1962)]. Listeners estimated the envelope frequency evoked by a 5-Hz, second-order SAM white noise with f_m shifted in frequency to make the complex envelope inharmonic. The results show that perception of the envelope-beat frequency was affected by the inharmonicity, suggesting that, at least at low modulation frequencies, the envelope frequency is determined by a modulation-distortion or envelope component. © 2005 Acoustical Society of America. [DOI: 10.1121/1.2126824]

PACS number(s): 43.66.Ba, 43.66.Mk [JHG]

Modulation masking produced by second-order modulators^{a)}

Christian Füllgrabe^{b)}

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Brian C. J. Moore

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Technical University of Denmark, Denmark*

Stanley Sheft

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(Received 13 February 2004; revised 30 December 2004; accepted 30 December 2004)

Recent studies suggest that an auditory nonlinearity converts second-order sinusoidal amplitude modulation (SAM) (i.e., modulation of SAM depth) into a first-order SAM component, which contributes to the perception of second-order SAM. However, conversion may also occur in other ways such as cochlear filtering. The present experiments explored the source of the first-order SAM component by investigating the ability to detect a 5-Hz, first-order SAM probe in the presence of a second-order SAM masker beating at the probe frequency. Detection performance was measured as a function of masker-carrier modulation frequency, phase relationship between the probe and masker modulator, and probe modulation depth. In experiment 1, the carrier was a 5-kHz sinusoid presented either alone or within a notched-noise masker in order to restrict off-frequency listening. In experiment 2, the carrier was a white noise. The data obtained in both carrier conditions are consistent with the existence of a modulation distortion component. However, the phase yielding poorest detection performance varied across experimental conditions between 0° and 180°, confirming that, in addition to nonlinear mechanisms, cochlear filtering and off-frequency listening play a role in second-order SAM perception. The estimated magnitude of the modulation distortion component ranges from 5%–12%. © 2005 Acoustical Society of America.

[DOI: 10.1121/1.1861892]

PACS numbers: 43.66.Ba, 43.66.Dc, 43.66.Mk, 43.66.Nm [NFV]

Pages: 2158–2168

The dynamic range of useful temporal fine structure cues for speech in the presence of a competing talker

Michael A. Stone^{a)} and Brian C. J. Moore

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Christian Füllgrabe^{b)}

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(Received 18 February 2011; revised 19 July 2011; accepted 20 July 2011)

Within an auditory channel, the speech waveform fine structure (TFS) information. Vocoder processing envelope (E') within each channel and uses it E'_{Carr} , has reduced information content compared to the range over which listeners make additional use of TFS in a competing-speech task. The target-and-background (T&B) vocoder. In each channel, $E_O + \text{TFS}$ replaced E' . The replacement decision was based on comparing $E_O + \text{TFS}$ to a “switching threshold,” expressed relative to E' measured as a function of switching threshold, E_{switch} . The T&B method. Scores showed a dependence on $E_O + \text{TFS}$ functions (IIFs) showed that $E_O + \text{TFS}$ information was important. When $E_O + \text{TFS}$ was around -2 dB, but when $E_O + \text{TFS}$ information was around -4 dB, the scores were similar to the T&B method. © 2011 Acoustical Society of America. [DOI: 10.1121/1.3588111]

PACS number(s): 43.71.Gv, 43.71.An [AA]

LETTERS TO THE EDITOR

This Letters section is for publishing (a) brief acoustical research or applied acoustical reports, (b) comments on articles or letters previously published in this Journal, and (c) a reply by the article author to criticism by the Letter author in (b). Extensive reports should be submitted as articles, not in a letter series. Letters are peer-reviewed on the same basis as articles, but usually require less review time before acceptance. Letters cannot exceed four printed pages (approximately 3000–4000 words) including figures, tables, references, and a required abstract of about 100 words.

Contribution of very low amplitude-modulation rates to intelligibility in a competing-speech task (L)^{a)}

Christian Füllgrabe,^{b)} Michael A. Stone, and Brian C. J. Moore

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Cambridge CB2 3EB, England*

(Received 30 July 2008; revised 16 December 2008; accepted 24 December 2008)

It is generally agreed that the slow fluctuations in the envelope of speech in different spectral channels carry critical information for intelligibility. Previous studies in which amplitude modulation (AM) was selectively removed from the speech signal showed that modulation rates between 4 and 16 Hz are most important, and that rates falling outside this range contribute little or not at all to speech intelligibility. The present study investigated the role of very low (<4 Hz) AM rates in the ability to identify sentences in an interfering background talker. The mixture was processed through a noise vocoder. The depth of AM with rates below 4, 1.3, or 0.4 Hz was reduced using a multi-channel envelope compressor with a high compression ratio. Data obtained using nine normal-hearing listeners demonstrate that low-rate AM, in the range 0.4–4 Hz, contributes to the intelligibility of relatively long speech utterances, at least for adverse listening conditions in which background noise is present and listeners are forced to rely on envelope cues in a few spectral channels. © 2009 Acoustical Society of America. [DOI: 10.1121/1.3075591]

PACS number(s): 43.66.Mk, 43.71.Sy, 43.71.Es [RLF]

Pages: 1277–1280

Effects of age and hearing loss on stream segregation based on interaural time differences

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Abstract: The effect of interaural time differences (ITDs) on obligatory stream segregation for successive tone bursts was investigated for older listeners with normal hearing (ONH) and hearing loss (OHL), by measuring the threshold for detecting a rhythmic irregularity in an otherwise isochronous sequence of interleaved “A” and “B” tones. The A and B tones had equal but opposite ITDs from 0 to 0.5 ms. For some of the ONH listeners, the threshold increased with increasing ITD, but no OHL listener showed an effect of ITD. It is concluded that hearing loss reduces the potency of ITDs in inducing obligatory stream segregation.

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PACS numbers: 43.66.Sr, 43.66.Mk, 43.66.Pn, 43.66.Qp [QJF]

Date Received: April 18, 2014 **Date Accepted:** June 30, 2014

No evidence for a link between noise exposure and auditory temporal processing for young adults with normal audiograms

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Abstract: The link between lifetime noise exposure and temporal processing abilities was investigated for 45 normal-hearing participants, recruited from a population of undergraduate students, aged 18 to 23 years. A self-report instrument was employed to assess the amount of neuropathic noise (here defined as sounds with levels exceeding approximately 80 dBA) each participant had been exposed to and sensitivity to temporal-fine-structure and temporal-envelope information was determined using frequency discrimination and envelope irregularity detection tasks, respectively. Despite sizable individual variability in all measures, correlations between noise exposure and the ability to process temporal cues were small and non-significant. © 2020 Acoustical Society of America

[Editor: Qian-Jie Fu]

Pages: EL465–EL470

Received: 30 March 2020 **Accepted:** 16 May 2020 **Published Online:** 2 June 2020

Improving hearing-aid gains based on automatic speech recognition

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**Lionel Fontan,^{1,a)} Maxime Le Coz,¹ Charlotte Azzopardi,^{2,b)} Michael A. Stone,^{3,c)}
and Christian Füllgrabe^{4,d)}**

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Abstract: This study provides proof of concept that automatic speech recognition (ASR) can be used to improve hearing aid (HA) fitting. A signal-processing chain consisting of a HA simulator, a hearing-loss simulator, and an ASR system normalizing the intensity of input signals was used to find HA-gain functions yielding the highest ASR intelligibility scores for individual audiometric profiles of 24 listeners with age-related hearing loss. Significantly higher aided speech intelligibility scores and subjective ratings of speech pleasantness were observed when the participants were fitted with ASR-established gains than when fitted with the gains recommended by the CAM2 fitting rule.

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[Editor: Douglas D. O'Shaughnessy]

Pages: EL227–EL233

Received: 14 March 2020 **Accepted:** 13 August 2020 **Published Online:** 8 September 2020

Agenda

People

Meetings

Publications

Other Items

P&P Members Serving ASA

Thank you to all of the many P&P member who are serving ASA.

Some new appointments:

Barb Shinn-Cunningham – President Elect!

Matt Goupell – Membership Committee

Pavel Zahorik – Meetings Committee

Laurel Carney – Medals and Awards Committee

Check out all the committees and volunteer here:

<https://acousticalsociety.org/volunteer/>

The P&P Technical Committee

Chris Stecker is our new chair!! (2023-2026)

Rotating off in 2023

Magda Wojtczak, Pavel Zahorik, Yi Shen

Term 2021 – 2024

Julie Arenberg, Ellen Peng, Bonnie Lau, Anahita Mehta, Andrew Brown, Skyler Jennings

Term 2022 – 2025

Doug Brungart, David Eddins, Ruth Litovsky, Ginny Richards, Kelly Whiteford

Term 2023 – 2026

Axel Ahrens, Prudence Allen, Alessandro Altoe, Deniz Baskent, Gabriela Blanco, Chris Conroy, Anna Diedesch, Qian-Jie Fu, Etienne Gaudrain, Matt Goupell, Nathaniel Greene, Daniel Guest, Laurie Heller, Ken Henry, Julia Jones Huyck, Brittany Jaekel, Amander Lauer, Jungmee Lee, Esteban Sebastian Lelo do Larrea-Mancera, Xin Luo, Brandon Merritt, Michelle Molis, Brian Monson, Ramesh Kumar Muralimanohar, Erol Ozmeral, Ramnarayan Ramachandran, Vishakha Rawool, Lina Reiss, Nirmal Srinivasan, Ganesh Swaminathan, Jon Venezia, Bill Whitmer, Yi Zhou,

Awards and Fellows

Congratulations to new P&P Fellows **Sarah Verhulst** and **John Galvin**!

Congratulations to the 2023 Hartmann Prize recipient **Bertrand Delgutte**!

PLEASE THINK HARD about nominating people for this special award.
The deadline is in September.

William and Christine Hartmann Prize in Auditory Neuroscience

To encourage and honor research that links auditory physiology with auditory perception or behavior in humans or other animals.

The Prize recipient will be selected from among nominees whose fields of research include anatomy and physiology as it relates to auditory perception, electrophysiology and imaging of the listening brain, and mathematical and computer modeling of the auditory system.

The Prize is not limited to fundamental neuroscience. It may be given for applied research in animal bioacoustics, speech communication, neurally based prostheses, or music perception.

Student Council Rep

TC: Psychological and Physiological Acoustics



Ann Holmes (she/her)

University of Louisville

Term: Fall '22 (Nashville) – Spring '24 (Ottawa)

Interested in joining Student Council?





Student Events

Monday (5/8)

First-Time Attendee/Student Orientation

80 attendees

Student Meet and Greet

100 students attended

Student Informal Outing

40 students attended

Wednesday (5/10)

Student Reception

6:00 – 8:00 PM





Join SMMFL!

Students Meet Members for Lunch
(SMMfL)

Student Outreach for Networking &
Integrating Colleagues

SONIC



Student Outreach for
Networking and Integrating Colleagues

Make connections as a Newbie!
Help fellow students as a Guide!

Info / sign-up:



30 students
signed up for
Chicago!



SONIC pairs first time attendees with experienced students to help guide them through the ASA meeting and help with networking.

David T. Blackstock Mentorship Award



Dr. Mark Hamilton
University of Texas Austin
Professor of Physical Acoustics



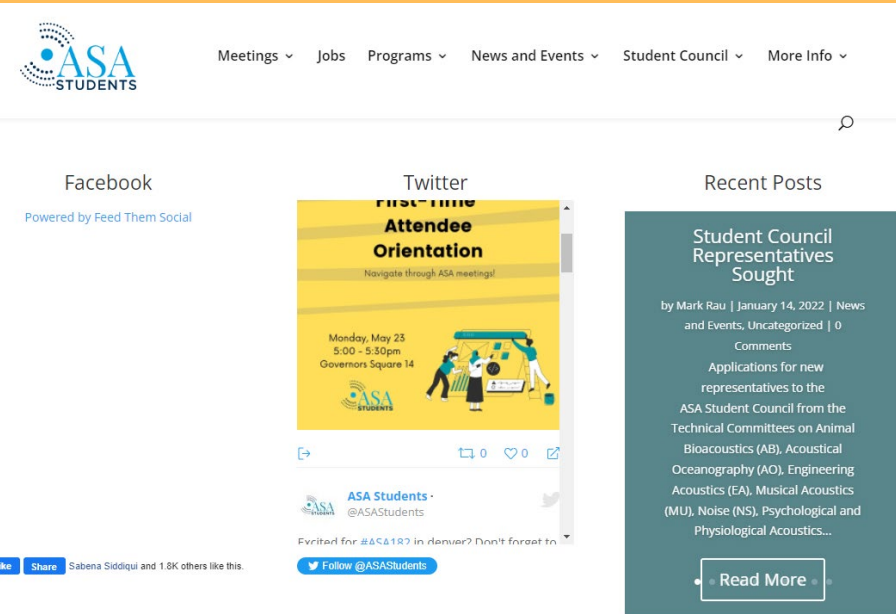
TEXAS
The University of Texas at Austin

Grant and Fellowship Panel

- Thur 1:30-3:00 pm | Indiana/Iowa
- Special session hosted by Student Council.
- Experts from NIH, ONR, NSF, and ASA will be participating.
- Encourage your students to attend!



Check out our website:
asastudents.org



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Acoustical Society of America Students



asastudentcouncil@gmail.com



@students_ASA

NEW!

Agenda

People

Meetings

Publications

Other Items

This Meeting: Chicago

1aPP: Psychological and Physiological Acoustics Poster Session I

1pID1: Keynote: Erick Gallun

2aPP: David Green and Psychoacoustics

2pPP: Best Student Paper Award Poster Session

3aPP: Sensory and Non-Sensory Influences on Auditory Development

3pPP: Auditory Neuroscience Prize Lecture

4aPP: Perception Beyond Tones and Speech in Normal and Impaired Hearing: Voice, Emotions, and Music Perception

4pPP: Psychological and Physiological Acoustics Poster Session II

5aPP: Environmental Sounds: Perception, Cognition, Applications

Next Meeting: Sydney

4-8 Dec 2023

Abstract deadline will be 24 July 2023

Down Under Funder deadline is 31 May (notifications 15 July)

Options for the open TC meeting for P&P:

- Tues morning 7am Sydney time (Monday 3pm in the US)
- Tues afternoon 5:30pm (Tues 1:30 am in the US)
- either way we will record it...

Can we please have a rough head count?

Special Sessions for Sydney

1. Understanding hearing in a dynamic world (Alan Kan, Ray Goldsworthy, Valeriy Shafiro)
2. Auditory sensory augmentation (Craig Jin and Anastasia Devana)
3. Top-down and bottom-up processing in individuals with normal hearing and hearing difficulties (Viji Easwar, Sriram Boothalingam, Aravind Parthasarathy)
4. Auditory cognition in interactive virtual environments (Janina Fels and Jörg Buchholz)
5. Comparative models of hearing loss (Amanda Lauer and Micheal Dent; joint with AB)
6. The physiology and psychophysics of predictive auditory scene analysis and object formation (Jörg Encke and Michael Pecka)

Future Meetings

Spring 2024: Ottawa, Canada (13-17 May 2024)

NOW is the time to propose special sessions for Spring 2024 in Ottawa!

Fall 2024: Fully virtual meeting

More on next slide

Spring 2025: New Orleans LA (19-23 May 2025, joint with ICA)

Fall 2024 Virtual Meeting

Virtual meetings are good for budgets, the environment, and accessibility

But there are clear challenges especially around engagement and networking for students

Fall 2024 is happening but format is an open slate

Tech Council would like an “outline of sessions” from each TC by Friday

My questions:

- Is there interest from P&P in attending this meeting in the Fall?
- What would a good virtual meeting for P&P look like?

Fall 2024 Virtual Meeting

Tech Council would like feedback on

- Dates (week of Nov 20 ideally, or first week of Dec)
- Length of meeting? Full days or part days?
- What can you do virtually that you can't do in person?
- What social activities do you want?
- What could Student Council organize?

Ideas that have come up

- Panel discussions
- Virtual tours of labs, industry tours
- Interviews or Q&A sessions
- Lightning talks
- Electronic posters

Best Student Poster Award

Congratulations to all the students who presented today!

Thank you to Ellen Peng and Kelly Whiteford for organizing a new scoring system and lining up judges.

We have \$1K to spend on this award so I have requested that we up the prize money (starting Spring 2024) to give three awards of \$500/300/200

Any comments on the dedicated poster session format?

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Other Items

Associate Editors

JASA

Emily Buss (P&P Coordinating Editor)

Hari Bharadwaj, Jonas Braasch, Chris Brown, Bastian Epp, Matt Goupell, Laurie Heller, Philip Joris, Colleen Le Prell, Christian Lorenzi, Heidi Nakajima, Sunil Puria, Chris Shera, Pam Souza, Chris Stecker, Sarah Verhulst, Li Xu, Pavel Zahorik

JASA-EL

Alessandro Altoè, Christopher Bergevin, Qian-Jie Fu, Lina Reiss

POMA

Kelly Whiteford



Proceedings of Meetings on Acoustics (POMA) is a free access, editor-reviewed, online journal available to readers without cost. POMA features articles from ASA Meetings as well as other acoustics-related ASA Cosponsored Meetings.



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Published and Permanently Archived

Turn your paper presentation or poster into a published paper with an assigned DOI # to ensure identification and increase exposure.



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Editorial Board members are experts in their field, providing invaluable feedback and expertise.



Special Session Collections

Utilize POMA to feature emerging research areas, hot topics, societal impacts of acoustics, and history and contributions of prominent members.



Submission Process Is Fast and Easy

Templates are available for authors and our editorial staff is always responsive and helpful.

POMA's rolling submission policy invites corresponding manuscripts from all past ASA Meetings!

If you have presented at any ASA Meeting, turn it into a published paper in POMA. It's not too late!

Visit pubs.alp.org/asa/poma to browse volumes from past ASA and cosponsored meetings.

Submit today at <http://www.editorialmanager.com/poma/>

For questions or comments please contact poma@acousticalsociety.org



POMA Student Paper Competition

POMA is holding a society-wide student paper competition for a POMA submission based on a presentation or poster from the Chicago meeting.



Award Amounts

Up to five student papers will receive an award of USD \$300. Additionally, the student paper winners will be noted on the POMA cover page and their article will be promoted in email and social media campaigns.



Qualifications

To qualify for the award, an author must:

- Be enrolled as a student at least half-time (graduates are eligible if the presented work was performed as a student within one year of the meeting). Note that the student author does not need to be a member of the ASA to qualify.
- Be listed as the first author on the submitted abstract and POMA manuscript and present the paper at the meeting.
- Submit the POMA manuscript by the competition deadline, which is 30 days after the conclusion of the meeting. For this meeting, manuscripts must be submitted on or before 11 June 2023.



To enter

Indicate your paper is part of the POMA Student Paper Competition by selecting this option during the POMA submission process.



Selection

The papers will be rated by the POMA Associate Editor corresponding to the technical area in which the paper was presented. The top related papers will be evaluated by the POMA Editor, POMA Assistant Editor, and POMA Manuscript Manager and up to five winning papers will be selected. Note that the paper judging will take place concurrently with the ordinary editorial review of a POMA submission; each judged paper will be returned with comments and a publication decision.



Additional Instructions

- To ensure the article passes the initial quality check, please use either the MS Word or LaTeX manuscript templates and follow all [manuscript preparation and submission instructions](#). Articles that do not pass the initial quality check are ineligible for the competition. See the submission checklist at the POMA Author Resources page.
- The competition deadline is 11:59 pm Eastern Standard Time, 11, June 2023.** Any manuscripts received after this will be considered for publication in POMA but will be ineligible for the competition.
- Regardless of the competition outcome, the opportunity to publish an editor-reviewed proceedings paper will enhance your CV/resume and help you take an important intermediate step toward a full refereed publication.



Submit today at <https://pubs.alp.org/asa/poma/pages/manuscript>

For questions or comments please contact poma@acousticalsociety.org

A Scope for JASA P&P?



JASA P&P Scope discussion background

- To define a scope that can be communicated to submitting authors, reviewers, and editors
- To encourage submission and consideration of papers on topics aligned with our member interests and editorial expertise
- To reduce effort and errors associated with AE's handling papers outside of expertise
- To identify emerging and boundary topics that may need to be specifically addressed

JASA P&P Scope actions so far

- Nov 30 2021: Informal discussion at Seattle PPTC
- Dec 2 2022: P&P CE/AE meeting (virtual)
- Dec 6 2022: Nashville PPTC meeting. Adopted motion to ask elected TC members to draft a scope for considerations
- Dec 13-19 2022: Email discussion with CE's and EIC
- March 31 2023: Elected TC meeting (virtual) to discuss statement

JASA P&P scope. EIC objections

- Want to maximize submissions. JASA overall scope is all of acoustics
- Don't reject; send to other TC or to EIC
- Ask AEs to work outside their comfort zone. Learning new topics is part of the research job description
- Cannot ask authors to address scope; want to make easier to submit
- Clarify "can't handle" vs "don't want"

JASA P&P Scope. Options

1. Do nothing
2. Change the TC “scope” statement on the ASA Website but do nothing about JASA
3. Adopt a statement of scope for JASA P&P submissions and seek guidance on what to do with it
 1. Wait for EIC buy-in
 2. Approach other TCs
 3. Distribute among AEs, plus “boilerplate” and instructions for how to handle out of scope

JASA P&P Scope. Proposed text: goals

Specify three key elements of in-scope topics:

1. They enhance our understanding of physiological or psychological ***mechanisms*** (whether normal or disordered)
2. Those mechanisms should underlie ***sensory or perceptual*** functions
3. The object(s) of sensation/perception should at least partly be ***acoustic phenomena*** (“hearing”)

JASA P&P Scope. Proposed text 1

Papers published in this section should address the normal and/or disordered ***mechanisms of hearing*** in humans and other animals.

¹By “hearing,” we mean the sensation and perception of acoustic phenomena generally. This definition can be construed as inclusive of sensory and perceptual questions related to audible sound as well as infrasound, ultrasound, bone- and body-conducted sound and possibly even vibration, balance / vestibular, and vibrotactile sensation and perception.

JASA P&P Scope. Proposed text 2

Papers published in this section should address the normal and/or disordered ***mechanisms of sensation and perception of acoustic phenomena*** in humans and other animals.



JASA P&P Scope votable options

1. Do nothing
2. Adopt a scope statement

JASA P&P Scope votable options

1. Adopt text 1 (“hearing”)
2. Adopt text 2 (“sensation and perception of acoustic phenomena”)

JASA P&P Scope votable options

1. Adopt text for web scope
2. Adopt text for JASA AE procedure / eventual author guideline