

# JOS 2020 Research Summary

(or “what we did over the pandemic”)

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CCRMA World Update 2021

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## Abstract

*Brief summaries of  
JOS publications and free-software  
since the last Open House,  
excluding anything already represented at the  
2021 CCRMA World Update*

*“A Spatial Sampling Approach to  
Wave Field Synthesis:  
PBAP and Huygens Arrays”*

*Julius Smith*

*<https://ccrma.stanford.edu/~jos/huygens/>*

*<https://arxiv.org/abs/1911.07575>*

## *“Audio Signal Processing in Faust”*

*Julius Smith*

*<https://ccrma.stanford.edu/~jos/aspf/>*

*Updated 2012–2021*

- Updated for Music 320C (new course!):  
<http://ccrma.stanford.edu/courses/320c/>
- Faust State Space Modeling recently added

# New Effects and Latency Measurement in JackTrip

Added to JackTrip last summer:

- General FAUST plugin support
- **Limiters** for send and/or receive directions  
(for documentation, say `jacktrip -0 help`)
- **Compressors** for send and/or receive (say `jacktrip -f help`)
- **Reverb** (Freeverb and/or ZitaRev), send and/or receive  
(say `jacktrip -f help`)
- Sample-accurate audio **latency test** in top audio channel  
(say `jacktrip -x help`)

*“Improved Real-Time Monophonic Pitch Tracking with the Extended Complex Kalman Filter”*

*Orchisama Das, Julius Smith, and Chris Chafe*

*Journal of the Audio Engineering Society,  
vol. 68, no. 1/2, pp. 78–86, 2020*

*local link*

*“Virtual Acoustic Rendering by  
State Wave Synthesis,”*

*Esteban Maestre, Gary Scavone, and Julius Smith,  
EAA Spatial Audio Signal Processing Symposium,  
(Paris, France), pp. 31–36, Sept. 2019*

*<https://hal.archives-ouvertes.fr/hal-02275169>  
local link*

*“Measurement and modeling of a resonator guitar”*

*Mark Rao and Julius Smith*

*Proceedings of the International Symposium on  
Musical Acoustics, Detmold, Germany, Sept.  
13–16, 2019*

*[https://pub.dega-akustik.de/ISMA2019/  
data/articles/000038.pdf](https://pub.dega-akustik.de/ISMA2019/data/articles/000038.pdf)*



*“A framework for contrastive and generative learning of audio representations,”*

*Prateek Verma and Julius Smith*

*arXiv 2010.11459 cs.SD, 2020*

*<https://arxiv.org/abs/2010.11459>*