

The FAAB (Feedback-Augmented Double Bass)

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1 PROGRAM NOTES

The FAAB (Feedback-Actuated Augmented Bass) is a modified double bass featuring electromagnetic pickups, an embedded speaker and onboard DSP through a Bela microprocessor. Through mechanically induced feedback and adaptive signal processing, the instrument expands the textural and spectral properties of traditional as well as extended playing techniques. The complex dynamics of the electro-acoustic couplings requires the performer to investigate human-instrument relationships from the perspective of negotiation and exploration rather than instrumental mastery. The improvised performance is a snapshot of the continuous co-evolution between, on the one hand, new techniques and performance practices and on the other, mechanical, acoustical and digital optimisation.

2 PROJECT DESCRIPTION

The FAAB (Feedback-Actuated Augmented Bass) is a string-feedback instrument developed over the summer of 2019. Its design is based on the recent evolution of a number of feedback string instruments [2] [1] loosely based on the design of the halldorophone [4]. With the FAAB, we have created a hybrid electro-acoustic instrument with an embedded microprocessor in the shape of a Bela with a CTAG FACE cape, allowing us to process the four strings independently at high audio rate and low latency. The DSP part of the instrument consists of a number of simple adaptive algorithms such as time-varying filters, amplitude management algorithms and synchronisation patches. We have aimed at coupling the processing algorithms to the timbral properties of the double bass, transporting these into an extended digital space, while still retaining the acoustic fingerprint of the instrument.

It is paramount to us that the instrument affords an embodied and dynamic playing experience for performers working within the broad field of experimental music and sound. On the one hand, the FAAB enhances a vocabulary of extended techniques and performance tactics developed over many years, while on the other, it resists attempts at complete technical mastery [3]. Through the complex and at times unpredictable behaviour of the feedback and signal processing, the performer can engage with the instrument in a mutual process of negotiation across the multiple systemic couplings.

The FAAB has been presented in Berlin and Athens and is the subject of a paper presented at NIME2020, discussing the development of the instrument in detail [5].

3 PERFORMANCE NOTES

Performer: Adam Pultz Melbye

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Fig. 1. The FAAB, front



Fig. 2. The FAAB, back

4 MEDIA LINKS

- Video: <https://vimeo.com/413504674>

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REFERENCES

- [1] Alice Eldridge and Chris Kiefer. 2017. The Self-resonating Feedback Cello: Interfacing gestural and generative processes in improvised performance. *Proceeding of New Interfaces for Musical Expression (2017)*, 25–29.
- [2] Thanos Polymeneas Lontiris. 2018. Low Frequency Feedback Drones : A non-invasive augmentation of the double bass. *Proceeding of New Interfaces for Musical Expression (2018)*, 340–341.
- [3] Paul Stapleton. 2008. Dialogic Instruments: Virtuosity (Re)Located in Improvised Performance. *Leonardo* 15, 11 (2008).
- [4] Halldór Úlfarsson. 2018. The halldorphone: The ongoing innovation of a cello-like drone instrument. *Proceeding of New Interfaces for Musical Expression (2018)*, 269–274.
- [5] Halldór Úlfarsson and Adam Pultz Melbye. 2020. Sculpting the behaviour of the Feedback-Actuated Augmented Bass: Design strategies for subtle manipulations of string feedback using simple adaptive algorithms. *Proceeding of New Interfaces for Musical Expression (2020)*.