



INFO

## MUSIANDRA Piano Duos 3

distance music making

### *3 Options Using Jamulus*

3. October 2022  
**MUSIANDRA project**

Matthias Krebs  
Forschungsstelle Appmusik / RCAM  
[www.forschungsstelle.appmusik.de](http://www.forschungsstelle.appmusik.de)

## Intro

---

- In our new project phase "**MUSIANDRA Piano Duos 3**", to which we cordially invite you, we want to focus on different points in order to intensify the exchange and the musical connection between us even more.
- We will make concerts in Paris (October), and also online concerts in December are planned.
- The goal of the third phase of our project is for the students to be able to rehearse with each other at their leisure from home.
- With this workshop material we want to give you tools to make this happen.
  - It contains recommendations for the Jamulus usage
  - It contains the link to our google doc where we can get in touch with each other and write possible dates...
- Feel free to add new ideas and ask any questions. 😊

---

Workshop Materials

# 3 OPTIONS USING JAMULUS

## There are 3 options using jamulus

### First option: Use your laptop

- Follow the instruction in the tutorial video for the installation of the Jamulus → <https://jamulus.io/wiki/Getting-Started> (pc and mac) - tutorials on slide 15 and followed
- **Use a wifi cable from the router to your pc!** Wifi does not work for a stable musical connection.
- Use an external sound device:
  - However, most people use external devices like USB microphones or audio interfaces. These usually perform much better than “stock” hardware in terms of audio quality, latency and time needed to set them up. Most are quite inexpensive and are “plug and play”.
  - Musiandra-Recommendations for piano, brass & voice:
    - the t.bone SC 425 – [https://www.thomann.de/de/the\\_t.bone\\_sc\\_425\\_usb\\_desktop\\_set.htm](https://www.thomann.de/de/the_t.bone_sc_425_usb_desktop_set.htm)
    - Beyerdynamic FOX – <https://www.amazon.de/beyerdynamic-professionelles-Heimstudios-Gro%C3%9Fmembran-Kondensator-Kapsel-Nierencharakteristik/dp/B078GV3WP6/>
  - Use wired headphones!

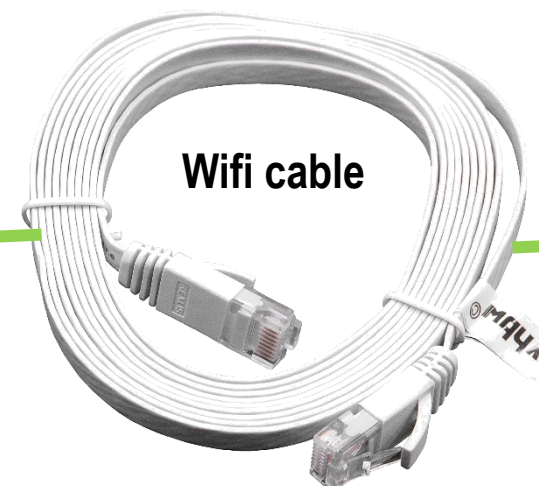
## Illustration: first option using your laptop



**USB-Mic**



**Laptop**

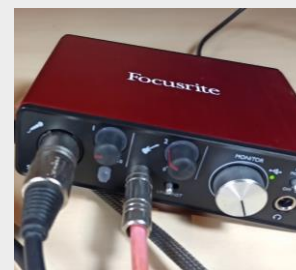


**Wifi cable**



**Router**

**Option version: using an external sound device and a microphone**



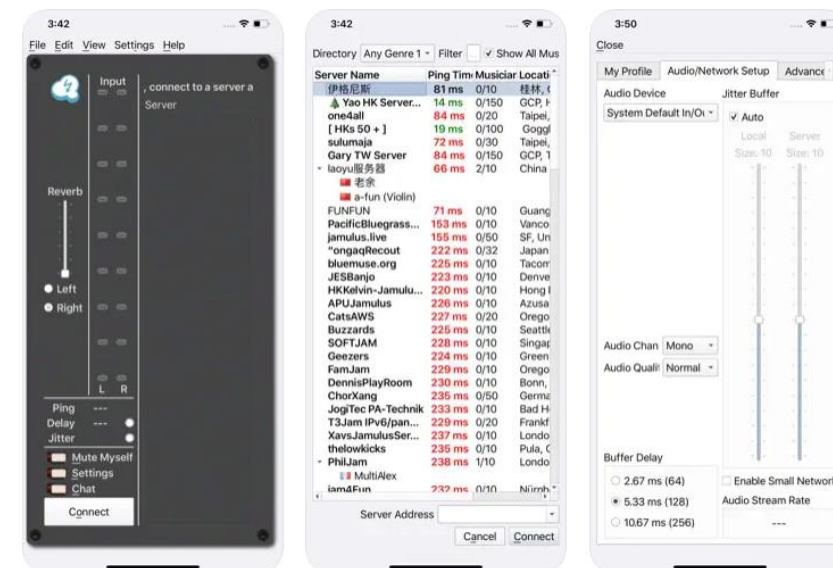
## There are 3 options using jamulus

### Second option: Use your smartphone/tablet

→ <https://jamulus.io/wiki/Installation-for-Android> // <https://apps.apple.com/sn/app/jamulus2-0/id1609844773>



- This is more an „emergency solution“ because it works quite simply, but:
  - Because it is wired: the latency is large and changes constantly  
→ the musical interaction is very challenging
  - You Need to use **wired headphones!** So, you need an adapter.
  - For Teachers it is good, because this way they can listen to the playing and can give feedback.





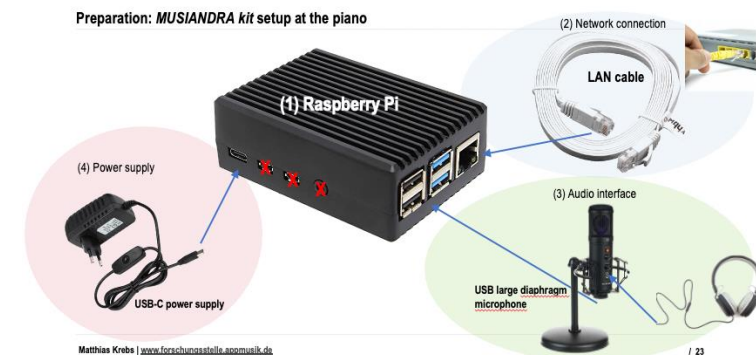
## There are 3 options using jamulus

### Third option: Use the MUSIANDRA-Set (special methode)

- The MUSIANDRA kit contains a harmonized set of individual hardware, that was composed to minimize the broadcasting challenges with focus on making music together online.



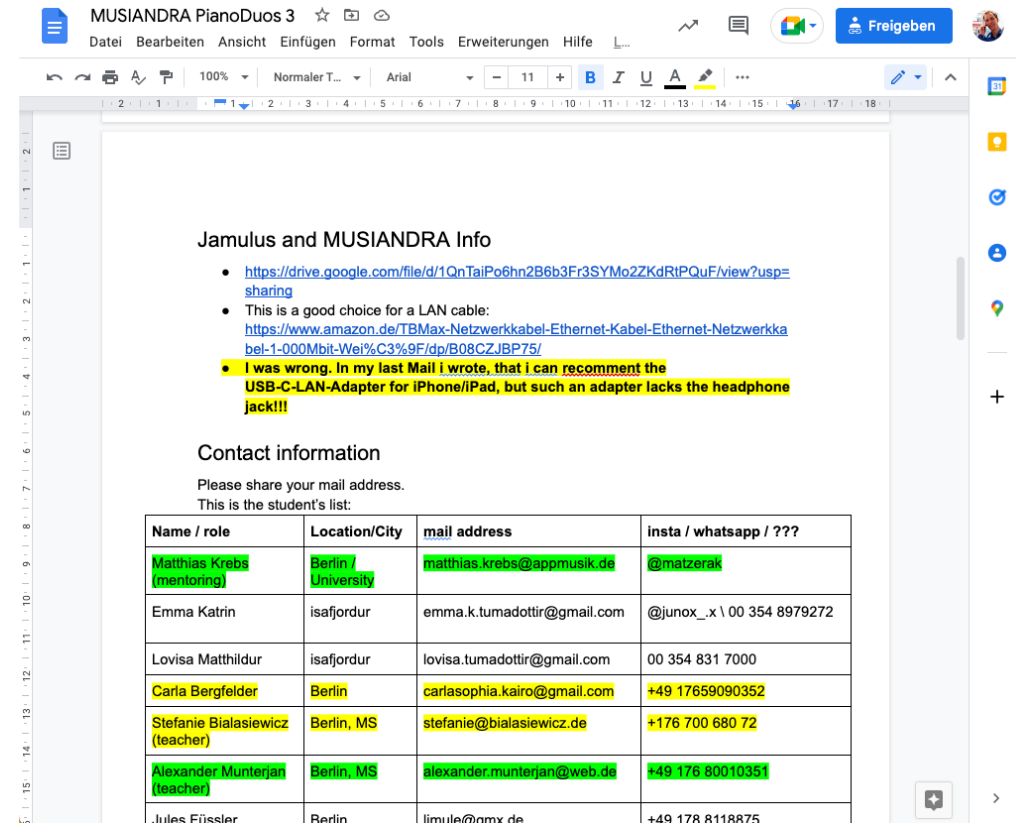
More info about the components in the following.



## Let's keep in contact

We made a google document to collect our contact infos and share some ideas from our meetings:

→ Link



**Jamulus and MUSIANDRA Info**

- <https://drive.google.com/file/d/1QnTailPo6hn2B6b3Fr3SYM02ZKdRtPQuF/view?usp=sharing>
- This is a good choice for a LAN cable:  
<https://www.amazon.de/TBMax-Netzwerkkabel-Ethernet-Kabel-Ethernet-Netzwerkka-bel-1-000Mbit-Wei%C3%9F/dp/B08CZJBP75/>
- I was wrong. In my last Mail i wrote, that i can recommend the USB-C-LAN-Adapter for iPhone/iPad, but such an adapter lacks the headphone jack!!!**

**Contact information**

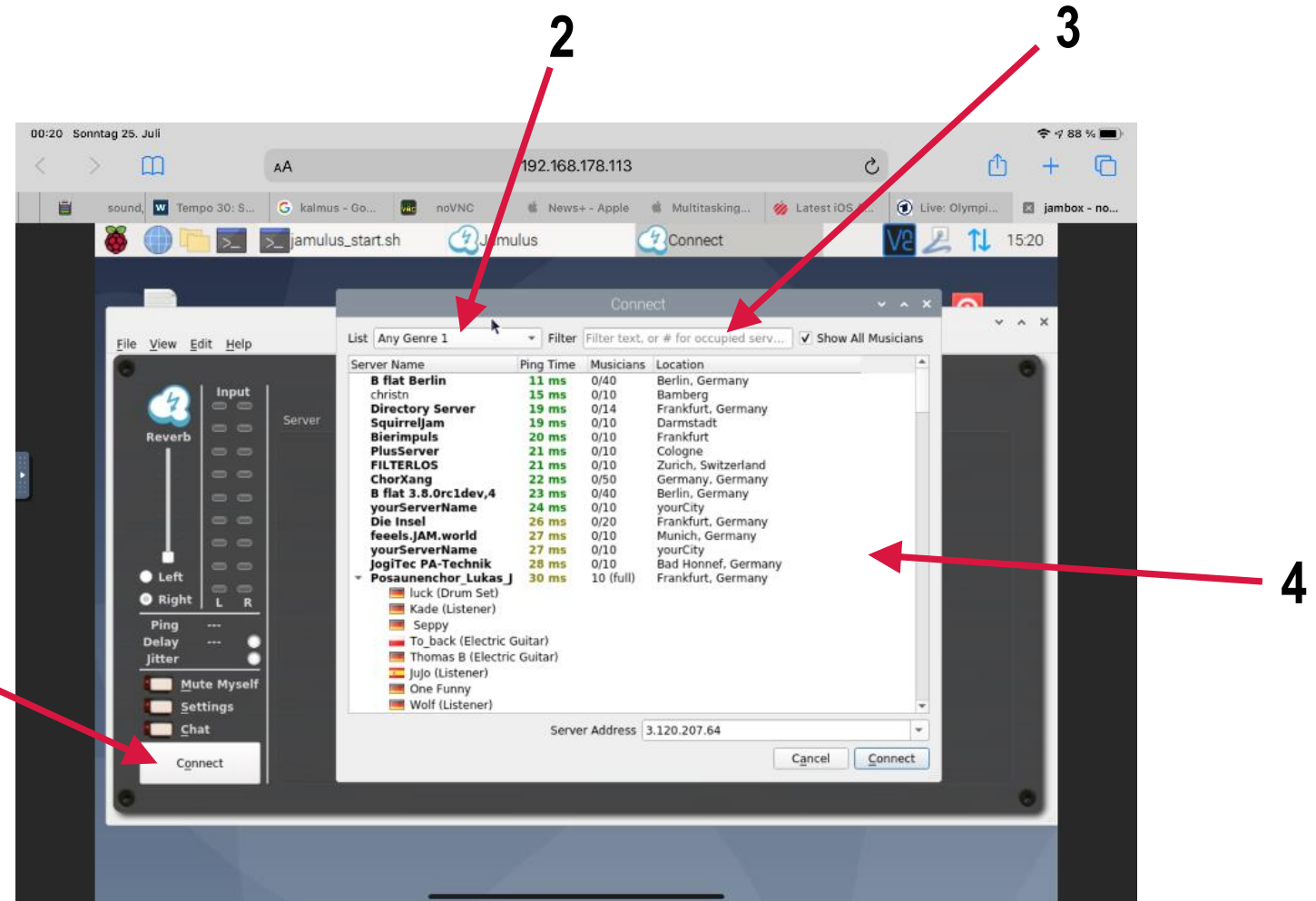
Please share your mail address.  
This is the student's list:

Name / role	Location/City	mail address	insta / whatsapp / ???
Matthias Krebs (mentoring)	Berlin / University	matthias.krebs@appmusik.de	@matzerak
Emma Katrin	isafjordur	emma.k.tumadottir@gmail.com	@junox_x \ 00 354 8979272
Lovisa Matthildur	isafjordur	lovisa.tumadottir@gmail.com	00 354 831 7000
Carla Bergfelder	Berlin	carlasophia.kairo@gmail.com	+49 17659090352
Stefanie Bialasiewicz (teacher)	Berlin, MS	stefanie@bialasiewicz.de	+176 700 680 72
Alexander Munterjan (teacher)	Berlin, MS	alexander.munterjan@web.de	+49 176 80010351
Jules Füssler	Berlin	limule@amx.de	+49 178 8118875



## We rehearse allways in the same „rehearsal room“ on Jamulus

- Open Jamulus
- 1. To join our rehearsal room click on "connect" first
- 2. then click on "List" in the new window that appears and select "Classic & Folk".
- 3. search for "SquirrelJam1 (BKC)"
- 4. Double click on the "SquirrelJam1 (BKC)"
- Use Zoom or WhatsApp or Skype for the video interaction.
- Use our google doc to find a good date for your rehearsal.



---

Workshop Materials

# GENERAL INFO

## Brief intro

---

- In the Erasmus+ project MUSIANDRA, one sub-project focuses on developing approaches that enable people from different countries to make music together via the internet. January 2022, we had our first project concert, where four-hand music pieces were performed online together from different locations (France, Germany, Iceland).
- Our approach uses the online music software Jamulus and we agreed on a specific hardware setup to minimize technical problems at the different locations.
- In connection with concert preparation, we also gained a number of insights into the design of rehearsals. These are to be further built upon in follow-up projects.
- In our now following project phase "**MUSIANDRA Piano Duos 3**", to which we cordially invite you, we want to focus on different points in order to intensify the exchange and the musical connection between us even more.
- We will make concerts in Paris (October), and also online concerts in December are planned.

## MUSIANDRA – What is this project about?

As part of the Erasmus+ project MUSIANDRA, a subproject focuses on exploring approaches that enable people from different countries to make and rehearse music together via the Internet.

- piano four hands (piano duets)
- band music & drama

Project idea & leadership: Dorlies Radike-Thiel

Key project actors (MUSIANDRA piano duos 3): Alexander Munterjan (Berlin), Margrét Gunnarsdottir (Ísafjörður), Bruno Jouard (Charenton-le-Pont, Paris), Marion Levy & Beate Kampel (Berlin), Ugur Celik (Ismir) and Matthias Krebs (Berlin/Salzburg)

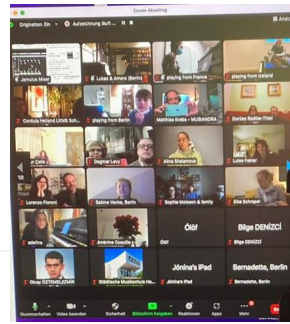
Project partners: Oberstufenzentrum TIEM, Leo-Kestenberg-Music School and Volksbühne Berlin (germany), Musikschule André Navarra in Charenton-le-Pont Paris (france), Music School Isafjördur (Island) und Vocational school Karabağlar Atatürk in Izmir (Türkei) and Mozarteum University Salzburg (austria)

More info: <http://www.musiandra.org>

## MUSIANDRA – MUSIANDRA Piano Duos 3

- In this context of our project, the medium Internet will (merely) not be experienced exclusively as an information channel, but rather as a specific musical place with its own kind of „physics“.
- **Therefore, it is not sufficient to simply transfer the experience from the rehearsal room to the Internet – specific skills are required, which must be explored in the project and methods developed for their acquisition.**
- **With the MUSIANDRA Piano Duos 3, we want to build on the experience of Part 1 (see our learnings, from slide 35 in this presentation)**





## Our December Concerts

### ##Online concert on 11.12. at 7 pm.

- Musiandra final concert for the exciting year 2022.
- Parents, grandma and grandpa (as a Christmas Sunday program) and also interested audience are invited. All are welcome to attend.
- We play the same program as in Paris on 21.October.
- Concert program or interplay will be rehearsed via Jamulus.
- Rehearsing via Jamulus and exploring new strategies is an important project goal for the project.
- we have a great special situation: the concert program is already set and we can focus on the Jamulus connection.

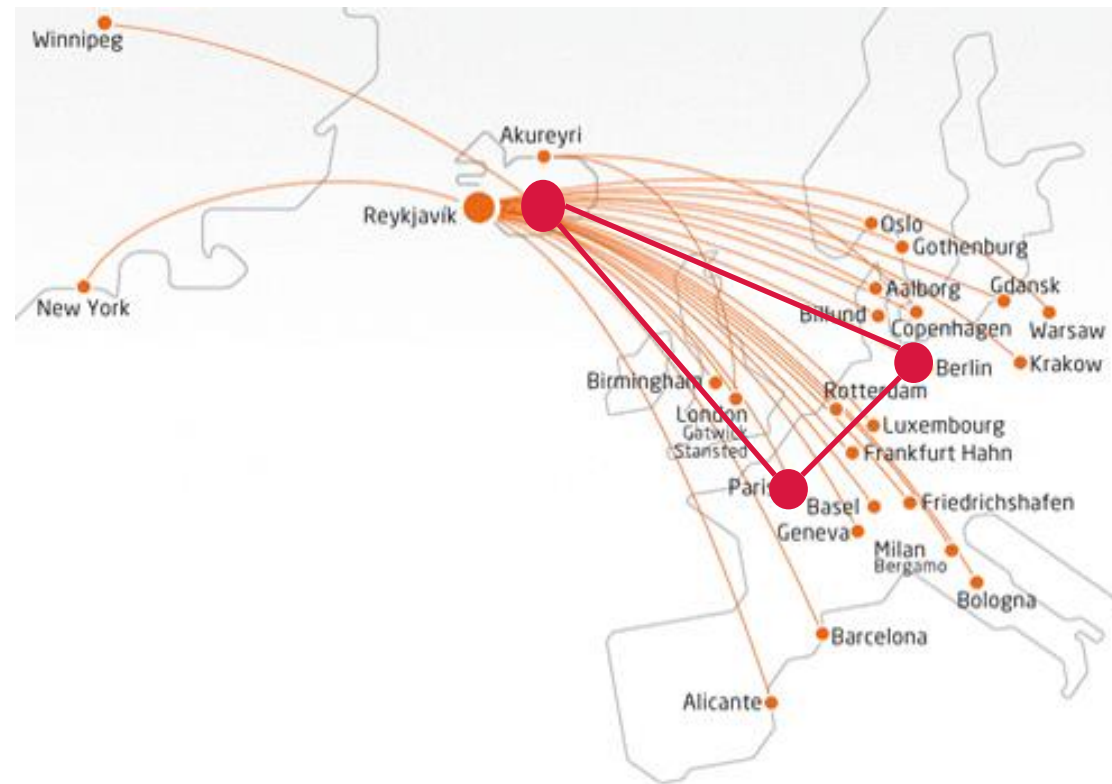
### ##Performance on 1.12. at 4 pm at the International Days of the Mozarteum University Salzburg

- Program for the "Welcome Ceremony" (40 minutes):
  - 3 piano pieces from the program for 11.12. (students\* play together in Paris, Berlin and Isafjodor via Jamulus). My suggestion:
    - \*\*\* Faure: Dolly Berceuse (Lovisa and Lewin)
    - \*\*\* Chanou: Sorcieres (Unnur and Apolline)
    - \*\*\* Battmann: Ah mon beau chateau (Lewin and Appoline)
  - in addition the band plays 2 pieces of music, e.g. Dorlies from Salzburg, the others from Berlin and Paris (only some wind instruments)
- and in addition a small choral piece could be played. The singers are from Salzburg, piano accompaniment is played from e.g. Berlin.
- furthermore, information about the MUSIANDRA project as well as learnings will be presented



## One of the first milestones

- We want to make a piano concerto for four hands online!

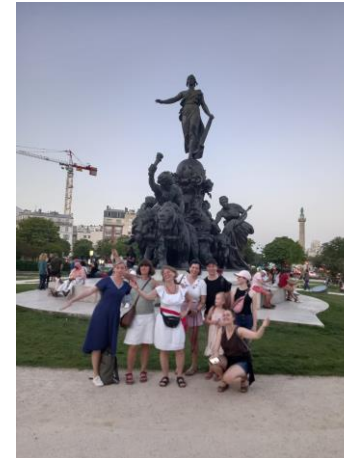


- Ísafjörður (Iceland)
- Berlin (Germany)
- Charenton-le-Pont, Paris (France)



## Being in contact

- An important element of our project is also physical meetings where we visit each other. In the course of the project, we have met
  - in Berlin, 12 students and their teachers from Charenton-le-Pont Paris and Ísafjörður (2021)
  - in Ismir, 8 project actors from Berlin (2021)
  - in Ísafjörður, 10 project actors from Charenton-le-Pont Paris, Berlin, Ismir (2022)
  - in Charenton-le-Pont Paris (in Oct. 2022)
- Further meetings are planned:
  - in Salzburg (29. Nov. – 5. Dec. 2022)
  - In Ismir (2023)
  - ...



---

Workshop Materials

# **JOINT MUSIC MAKING VIA JAMULUS USING A VERY COMMON LAPTOP PC (MAC OS & WINDOWS)**

## Jamulus

All over the world Jamulus allows huge choirs to rehearse, loud rock bands to play, and brings folk and classical musicians together. It's being used for remote music lessons, in schools and universities, in private and in public.

- Have a look at the documentation: <https://jamulus.io/wiki/Getting-Started>
- Especially consider the troubleshooting section: <https://jamulus.io/wiki/Client-Troubleshooting>
- You can also ask on the forums:  
<https://github.com/jamulussoftware/jamulus/discussions>

**AND there are plenty of youtube tutorials !!!**



scientific case study:

<https://jamulus.io/PerformingBandRehearsalsontheInternetWithJamulus.pdf>

## Collection of good tutorial videos

- <https://www.youtube.com/watch?v=FoN5M-dLCnw> - Jamulus on Windows (2021.02.02)
- <https://www.youtube.com/watch?v=3aNjXHOooe0> - Jamulus on Windows (2020.08.21)
- <https://www.youtube.com/watch?v=IB4ZxDB9vnU> - Jamulus on Mac (2020.04.06)
- <https://www.youtube.com/watch?v=FsiUpLi-nXI> - Jamulus on Mac (2021.02.02)
- <https://www.youtube.com/watch?v=atJ2b6PsTJY> - Jamulus on Mac (2021.02.18)
- This video shows a short screen from a little introduction workshop in the Musiandra-Project:  
<https://www.youtube.com/watch?v=kYJoh2lOkY0>

### What do you need?

- a wired computer (laptop or a desktop pc)
- an external audio device (like the USB-Microphone from the Musiandra set up, you can take the Musiandra-Mic for now!)
- a headphone (that is connected to the audio device)
- some software: jamulus (for windows or mac os) and ASIO4ALL (for windows only)
  - <https://jamulus.io/>
  - ASIO4ALL —> <https://jamulus.io/wiki/Installation-for-Windows>

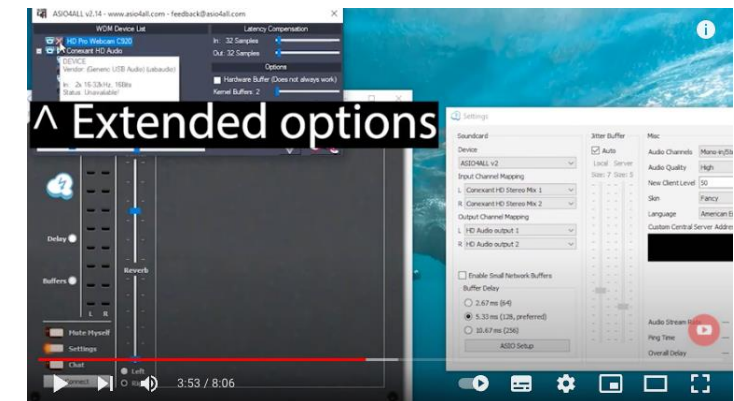
## The common approach with Jamulus

- You need a laptop, a USB audio interface, a microphone and a headphone.
- Connect your laptop to the router using a cable.
- Download the jamulus software and install
  - Mac OS & Windows are different here!

***You are ready to go!***



<https://www.youtube.com/watch?v=FsiUpLi-nXI>



<https://www.youtube.com/watch?v=FoN5M-dLCnw>



**Additionally a headphone distributor is a necessary component**

**The headphone distributor has to be plugged into the microphone-interface**



**teacher**

**student**

**Our favourite  
headphone  
distributor**



---

Workshop Materials

# HOW TO CONNECT TO JAMULUS WITH THE HELP OF THE MUSIANDRA KIT?

## The MUSIANDRA approach with Jamulus

- The MUSIANDRA kit contains a harmonized set of individual hardware, that was composed to minimize the broadcasting challenges with focus on making music together online.



### Why such an effort?

- We prefer a solution that is independent of the technical circumstances on site and the technical knowledge of those involved.

**More info about the components in the following.**



## Preparation: This is what you will find in the case (*MUSIANDRA kit*)



## What to prepare for the introductory workshop?

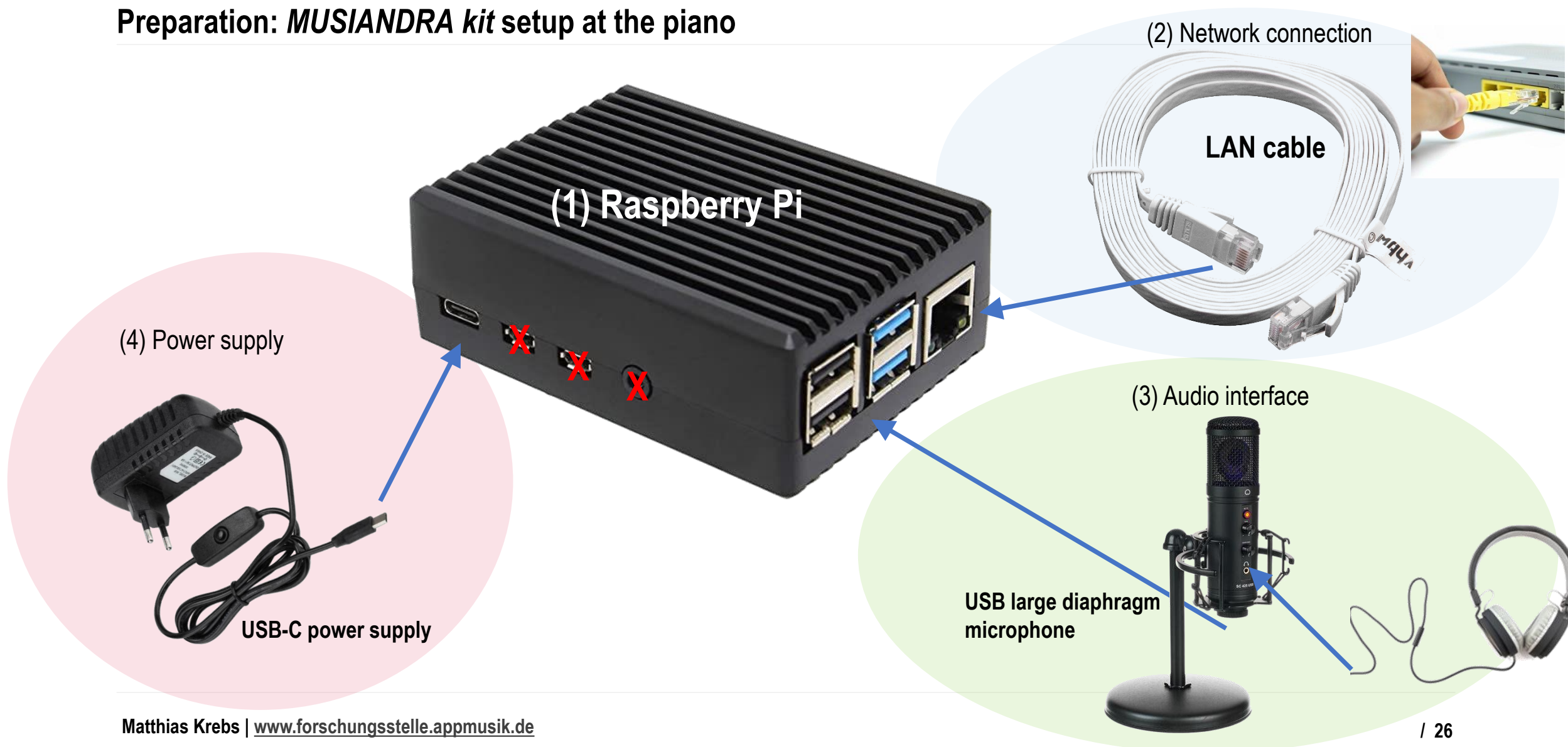
- The "Raspberry Pi 4b" (RasPi4) is a small mini computer.
- 1. The RasPi4 must be connected directly to the router (e.g. Fritzbox) using the LAN cable (included in the set).
- 2. An illustrated manual shows how to connect the single components of the *MUSIANDRA kit* and can be found on the next pages.
- 3. You need a headphone with cable (do not connect directly to the RasPi4, but to the USB microphone).
- 4. You need a laptop or a tablet (without special software!) to control the RasPi4.
- It is worthwhile to use the laptop also (parallel) to facilitate the communication.  
We are using Zoom or WhatsApp.

Raspberry Pi 4b





## Preparation: *MUSIANDRA kit* setup at the piano





**Preparation:** This is how the assembled *MUSIANDRA kit* should look like

**Headphones are required**

**The microphone-interface**



**Power plug**

**LAN cable must be plugged into a router**

**Every tablet or laptop in the same network can be used as control panel of the RasPi4. (wifi is ok)**

**Additionally a headphone distributor is a necessary component**

**The headphone distributor has to be plugged into the microphone-interface**



**teacher**

**student**

**Our favourite  
headphone  
distributor**

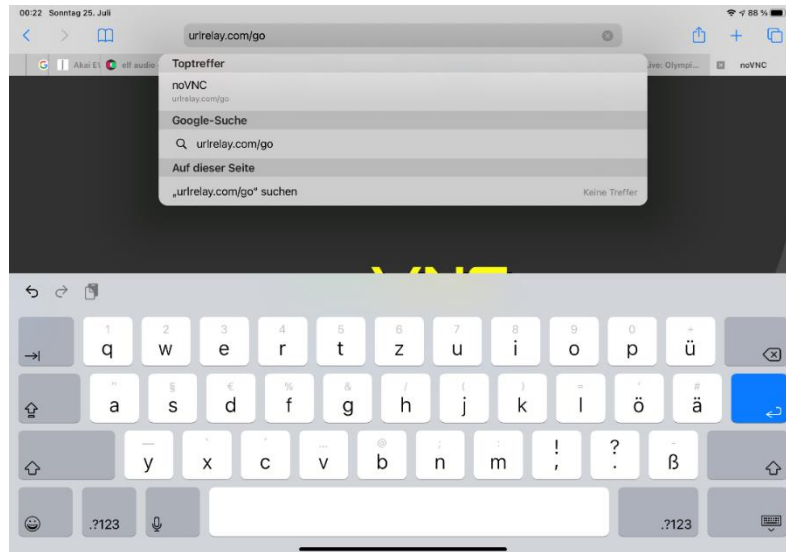




## Establishing a connection: Starting Jamulus on the RasPi4

To connect to the RasPi4, it must be accessed via network. For this purpose, an Internet browser (e.g. Safari or Firefox) can be used on a laptop or tablet. Please enter the following in the address line:  
[urlrelay.com/go](http://urlrelay.com/go)

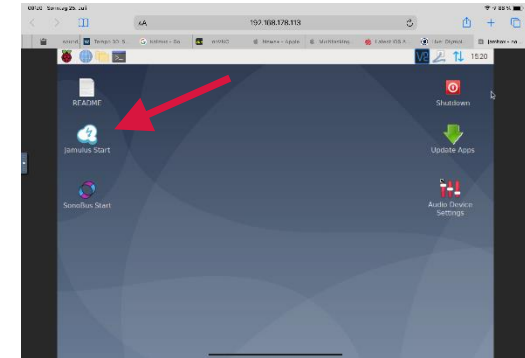
1



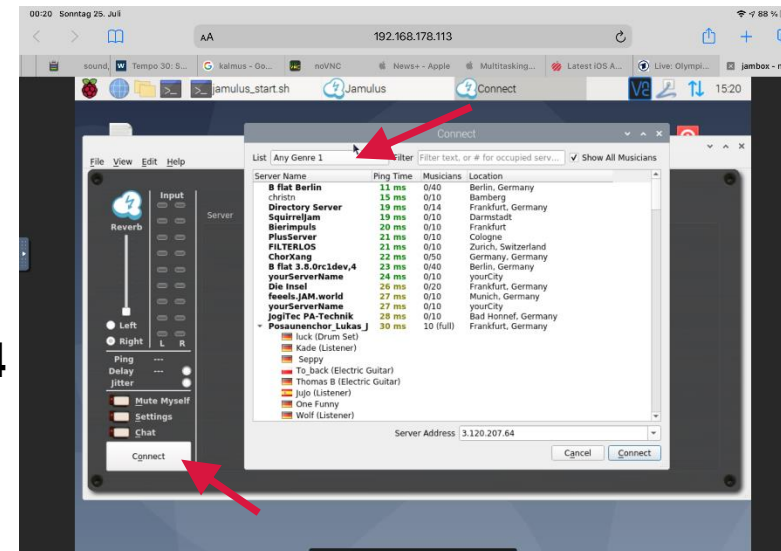
2



3



4



## Live Demonstration

- In a demonstration, Matthias and Alexander played to give an insight.



---

MUSIANDRA piano duos 1

# CONCERT REVIEW

## Our concert ... MUSIANDRA piano duos 1

- The concert was our first try. We got it up and running within a few rehearsals together.
- That is why we only informed the families involved and colleagues.
- As far as we know, this was the first concert in the world to take place in this form.
- The concert lasted 45 minutes.
- All in all, it went well and there were 38 Zoom participants for the most part. From France, Germany, Iceland and also from Turkey.

*Thank you very much - it was a great concert! Good luck for the next activities!*

*Hello to the Berliners and Icelanders! It was a pleasure to see and hear you again! :)*

MUSIANDRA

22. Jan. 2022

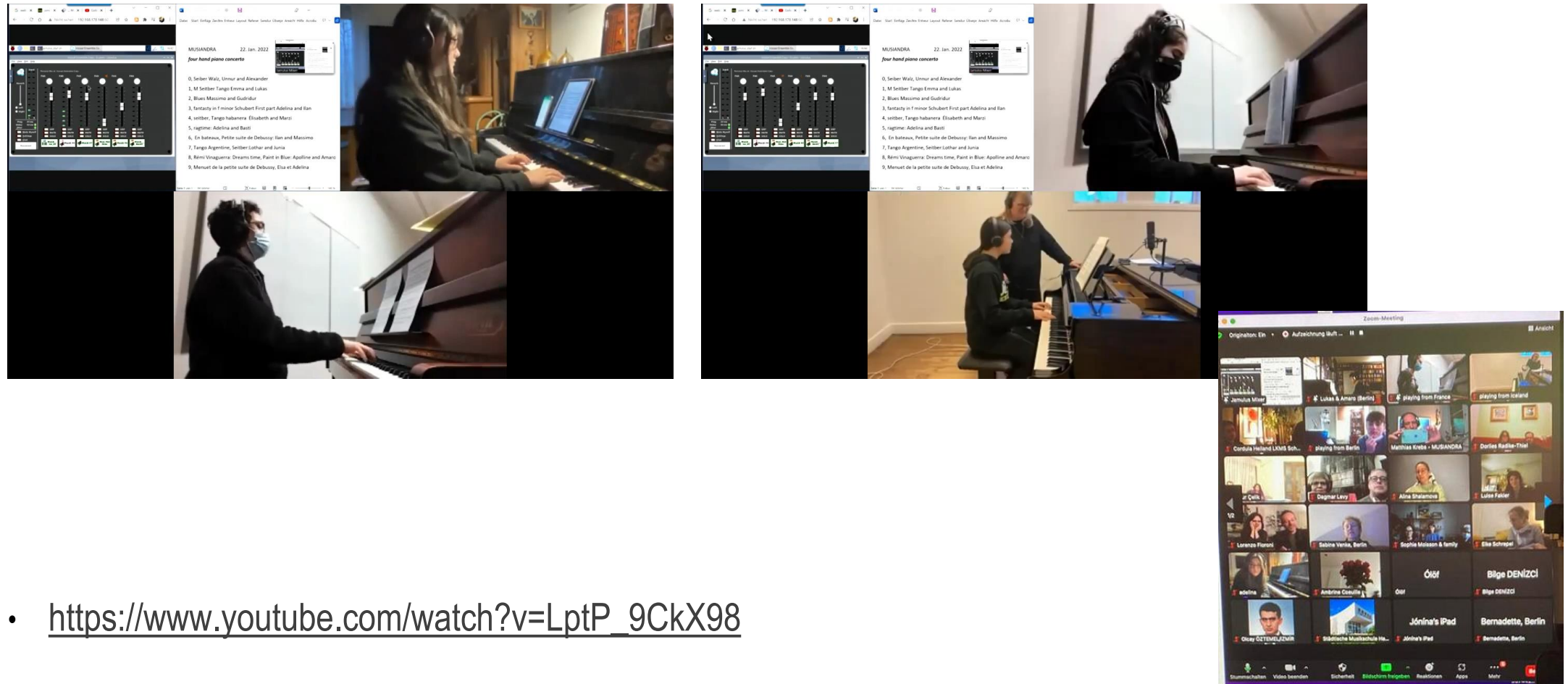


### ***four hand piano concerto***

- 0, Seiber, Walz, Unnur and Alexander
- 1, Seiber, Tango, Emma and Lukas
- 2, Seiber, Blues, Massimo and Gudridur
- 3, fantasy in f minor Schubert, First part, Adelina and Ilan
- 4, Seiber, Tango habanera, Élisabeth and Marzi
- 5, Seiber, Ragtime, Adelina and Basti
- 6, En bateaux, Petite suite de Debussy, Ilan and Massimo
- 7, Seiber, Tango Argentine, Lothar and Junia
- 8, Rémi Vinaguerra: Dreams time & Paint in Blue: Apolline and Amaro
- 9, Menuet de la petite suite de Debussy, Elsa and Adelina

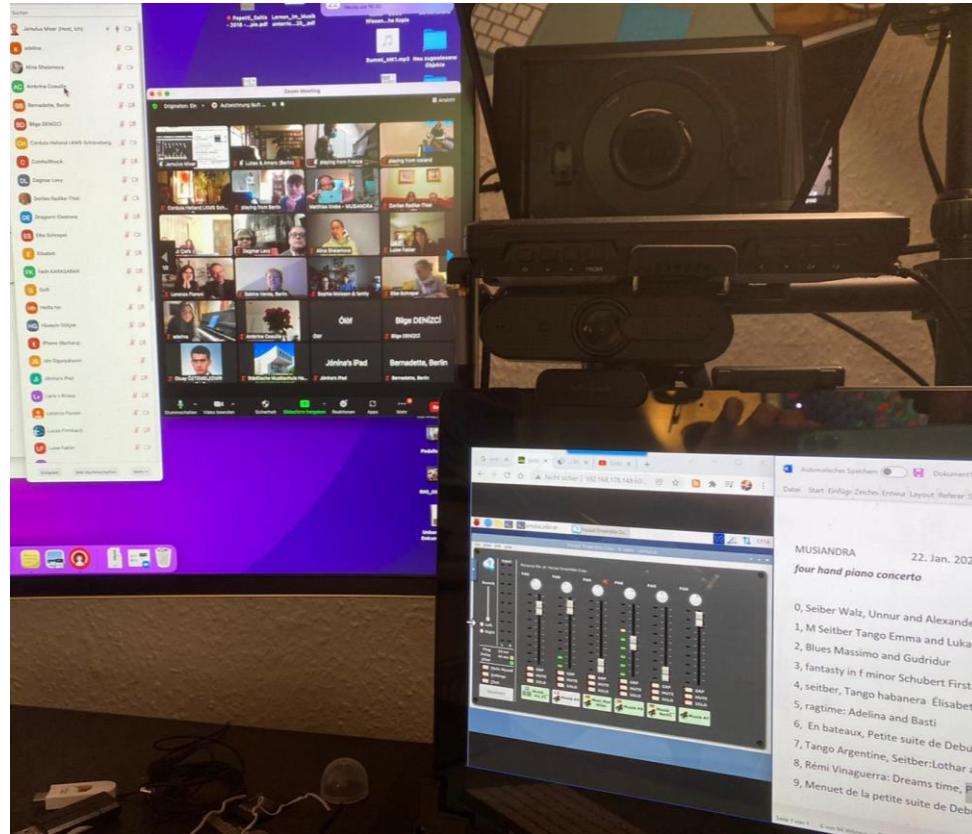


## Video

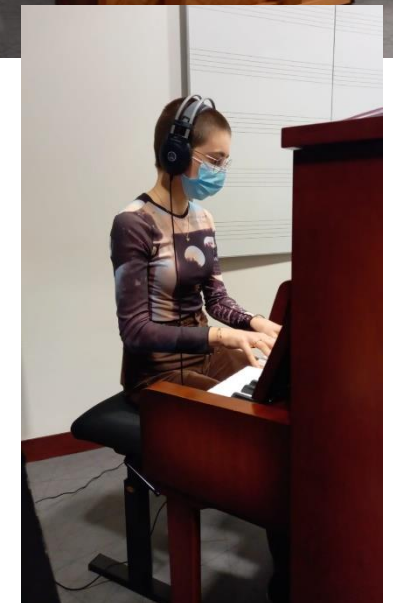
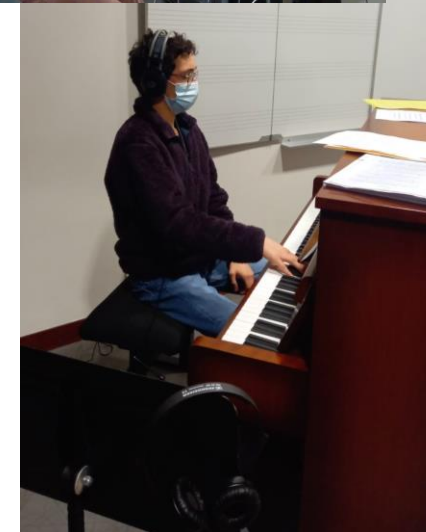


- [https://www.youtube.com/watch?v=LptP\\_9CkX98](https://www.youtube.com/watch?v=LptP_9CkX98)

## Photos from the concert



## Paris

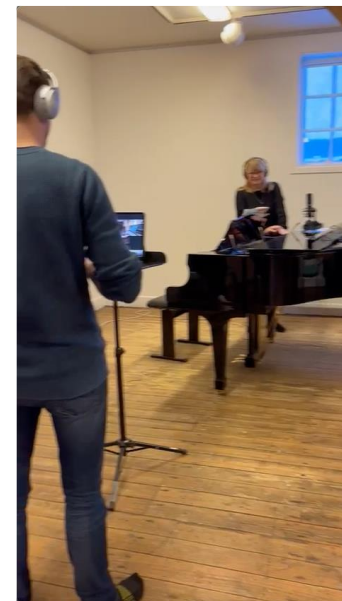
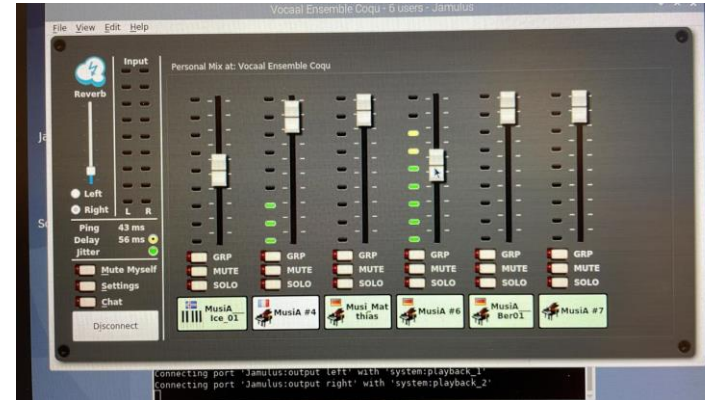




## Photos from the concert



**Berlin**



**Iceland**



---

MUSIANDRA piano duos 1

# LEARNINGS / REFLECTION

## **Learnings from the preparations**

- **Communication via Jamulus**

- The common rehearsals with many students made it difficult to establish a differentiated communication.
  - New teaching situation: two teachers present. Who makes the announcements? How is criticism carried out?
  - Which bar to start at again? – It was especially difficult that the teachers could not simply show in the notes where to go next.
- It is worthwhile if there is some kind of moderation that one teacher takes over. Rehearsing with duos only are more productive.

- **Interplay via Jamulus**

- In pieces with a joint beginning, either agree on whether to count in (who will do this) and who should be the leader, since it is not possible to hear the joint breathing well (improving the interplay during entries).
- Also in digital music making it seems possible to have the perception for differentiated playing (dynamics, agogics...). It is necessary to practice, even without the physical presence of the other, to dare and implement expressive playing.



## Learnings from the preparations

- **Statements on the motivation of the students by their teachers**
  - “There was no grumbling about the additional dates for rehearsals and the concert. On the contrary, they found it exciting to be there, even in the presence of their parents via zoom.”
  - “The joy and pleasure of making music and playing together was palpable and audible. Great motivation to practice. The joint meeting of the German participants was also very motivating.”
  - “My pupil had a lot of fun and it was a highlight in her daily Corona life.”



## Learnings from the preparations

---

- **Technical problems**

- Since there are no or only a few rooms at music schools with cable connection, the effort to create a possibility in the music school is high.
- In Paris, Vanessa had to organize an internet expert to make sure there was a LAN cable in a particular room. This took several months.
- A suitable server must be clear beforehand. Otherwise, there can be long waiting times until a server is found spontaneously.
- Some students had the set at their homes: there were problems with the microphones not being set up very well and probably the levels were not optimal either. Workshops should have been offered for students as well.

## Learnings from the concert

- **Responsibility**

- It was not clear who is actually responsible for the concert. Who takes care of the program? Who does the moderation? Who keeps an eye on the technology?

- **Soundcheck**

- The soundcheck went quite well. One hour was enough.
- Besides Jamulus, there should also be a common chat for organizational concerns: e.g. WhatsApp.
- The audience of the concert could be present via Zoom. The Jamulus sound was fed into Zoom with a mixer.

- **Concert moderation**

- About the student (age, place of residence, how long they have been teaching) and something about the piece
- Visualization from where the current musicians are playing.
- It would be good to pay attention to the background design on the stages.



## Learnings from the concert

---

- **Technical equipment at the performance venue:**
  - A laptop/iPad as a camera pointed at the pianist.
  - A headphone distributor at the mic so the pianist and teacher can listen together. The headphones should be half-open and have a longer cable.
  - When not playing the piano, the microphone can be muted.
  - A laptop/iPad for watching when not playing, with headphone distributor and headphones.
- Multiple *MUSIANDRA kits* create independence, but this also increases the complexity in the concert. The different locations should have been tested beforehand. The students should have practiced the technique during the rehearsal phase (leveling and microphoning).

## Central learnings

- “Great opportunity, very inspiring in terms of expanding the possibilities for exchange, togetherness, expanding the (musical) horizon.”
- “For the low-contact corona time absolutely helpful not to forget the togetherness!!!”
- “Digital togetherness requires different attentions than in presence play - thus expands alertness, attention, listening goals...”
  - “The teachers should just try the pieces via Jamulus, then they know how it is. Was only partially tried out.”
- Rehearsals should be better in small groups, while the concert can be played together (i.e. music school).
- Equipment can be lent to students so they can connect directly from home.
- There was no exchange between the piano teachers involved. It was prepared individually and then the students had to come spontaneously. About Jamulus was not actually worked musically in detail.





## Thank you for your attention

---

Let's connect and find new ways to play the piano together across borders.

Let's expand the boundaries and explore new methods.

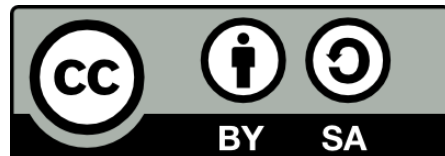
We will also use the time in Paris to share our online experiences and will probably play a big piano concert at the end of November or beginning of December.

## // Disclaimer



**Co-funded by  
the European Union**

MUSIANDRA is funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.



MUSIANDRA -

distance music making based on RasPi 4 and Jamulus - experiences and learnings © 2022 by Matthias Krebs is licensed under CC BY-SA 4.0

## Project partners

**Oberstufenzentrum**  
Berufliches Gymnasium, Berufsoberschule,  
Berufsfachschule, Fachoberschule und Berufsschule

**TECHNISCHE**  
**INFORMATIK**  
**INDUSTRIE**  
**ELEKTRONIK**  
**ENERGIE**  
**MANAGEMENT**



**mozarteum**  
**university** ●  
Musikpädagogik Salzburg



scientific supervision



## Bio

**Matthias Krebs** is working as a research assistant at the **University MOZARTEUM Salzburg**, he also heads the Research Center for Mobile Music Making & App Music (Institute for Digital Music Technologies in Research and Practice). His research addresses the educational potential arising from the changes in musical practices in the context of the development of mobile technology. Starting in 2009, Matthias Krebs is dealing with the systematic investigation of forms of musical practice with digital music technologies, in particular the phenomenon of mobile music making as well as the resulting pedagogic and artistic implications of this changed musical practice. Furthermore, Matthias Krebs is the author of numerous specialist articles on the topic of technology-mediated music making and is regularly active as a speaker at conferences, as a moderator and as a passionate blogger.

