



Achalai

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**Francesco De Mattia**

Conservatorio "A. Boito" - Parma

multidisciplinare, coinvolge archeologi, musicisti,  
musicisti, informatici, ingegneri in una rete distribuita a  
livello internazionale



# concetto di base

partire dai ritrovamenti archeologici di  
antichi strumenti musicali per arrivare a  
farli suonare ancora



creare un modello dello strumento musicale e  
produrre il suono attraverso la simulazione delle  
sue caratteristiche meccaniche



# Equazioni ispirate dall'archeologia

La sintesi del modello fisico non è un concetto nuovo in acustica

Viengono utilizzate equazioni create da Hiller e Quinz nel 1971

È una tecnica molto intensiva dal punto di vista computazionale

Il loro uso pratico è stato reso possibile dallo spostamento di ASTRA su GRID







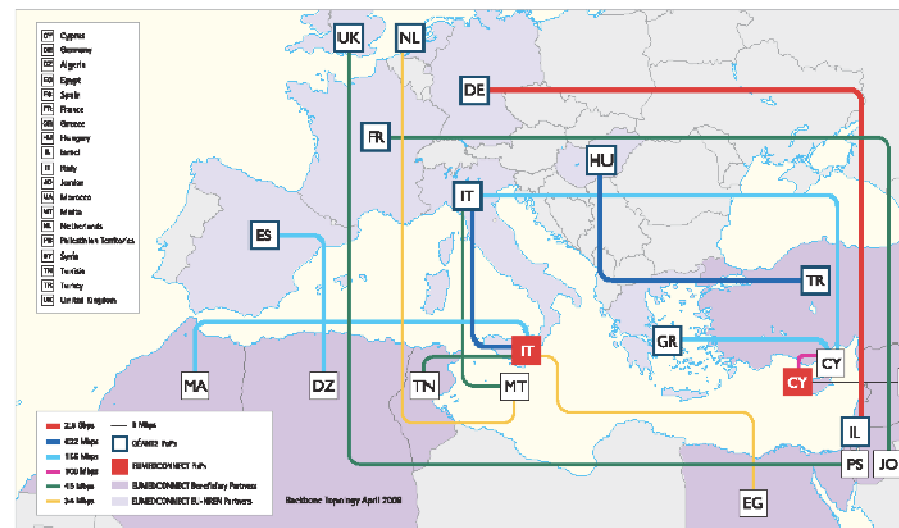
computer model



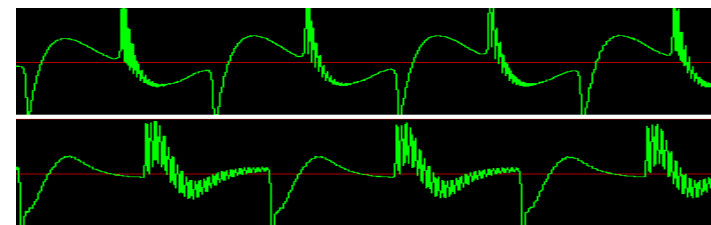
## GEANT/EUMEDCONNECT Network



Linking Mediterranean research and educational communities to Europe



EUMEDCONNECT is co-funded by the European Union through the EUMEDCONNECT project.



Reconstructed sounds



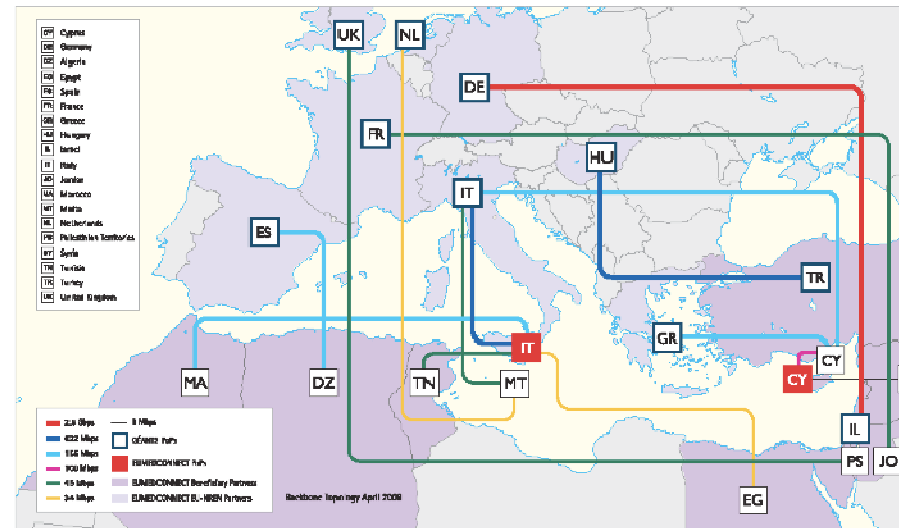
## GEANT/EUMEDCONNECT Network



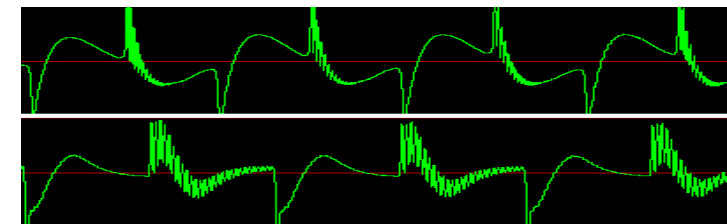
computer model



Linking Mediterranean research and educational communities to Europe



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Reconstructed sounds



# Accesso di lavoro /3: GENIUS Grid Portal

ASTRA Services!

- Start a Demo
- Job(s) Queue
- Clean Job(s) Queue
- Job(s) Data
- Back home



## Start a Demo

Step 1.

Please, select the ASTRA demo you want to run on the GILDA testbed.

Demo Selected

01. Bach fugue played on a reconstructed Epigonion

Start ASTRA de

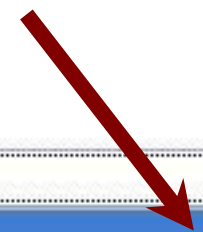
01. Bach fugue played on a reconstructed Epigonion

02. Middle age piece (G. Dufay) played on 4 reconstructed Epigonion

03. Excerpt from a XVII Century piece (A. Banchieri) played on 4 reconstructed Epigonions

04. Excerpt from a XVII Century piece (D. Buxtehude) played on 3 reconstructed Epigonions

05. Excerpt from a XIX Century piece (F. Schubert) played on 3 reconstructed Epigonions



## ASTRA Queue

<u>Globus JobID</u>	<u>Last Update Time</u>	<u>Status</u>	<u>Destination</u>	<u>Ex</u> <u>Coc</u>
<a href="#">FM2hLB5qTmdnNkUDwx0kAA</a>	13:41:02 Fri Dec 26:	Done	iceage-ce-01.ct.infn.it:2119/jobmanager-lcgpbs-infinite	0
<a href="#">oVxjPE1fIkul1zJpuliVw</a>	13:33:59 Fri Dec 26:	Scheduled	grid010.ct.infn.it:2119/jobmanager-lcgpbs-infinite	
<a href="#">5GcS-h8Qs1-DkcxJVz0Gmw</a>	13:33:35 Fri Dec 26:	Scheduled	grid010.ct.infn.it:2119/jobmanager-lcgpbs-long	



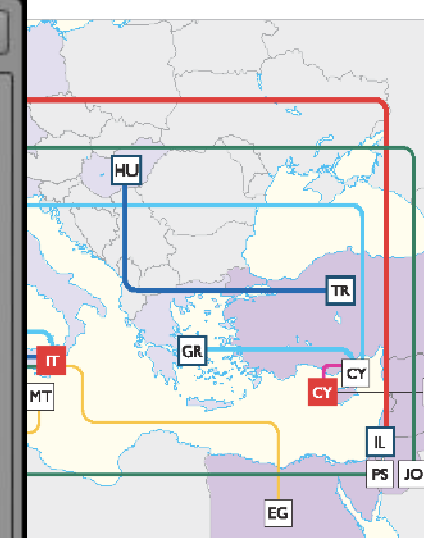
# esso di lavoro /4



A screenshot of the Kontakt 3 software interface. The window title is "Kontakt 3 - Native Instruments". The interface is divided into several sections: Master Editor (top) with volume, BPM (120.00), and Master Tune (440.00 Hz) controls; Instrument Edit Mode (middle) showing the selected instrument "EPI" with various parameters like Output, Voices, and Memory; and a detailed parameter section (bottom) for the "EPI" instrument, including Change Velocity, Source, and Group Insert Fx options. A keyboard graphic is visible at the bottom of the interface.

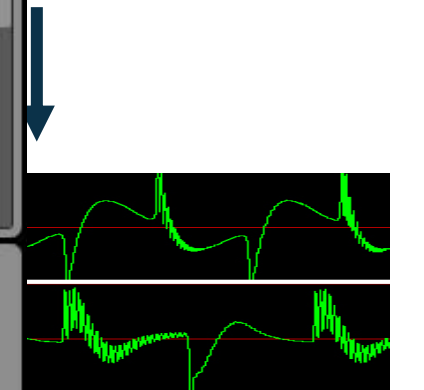
EDCONNECT  
work

Mediterranean research  
communities to Euro



GEANT2  
www.geant2.net

EDCONNECT is co-funded by the European Union through the ERDF/ERDF



# lo strumento ricostruito: l'epigonion

a settembre 2008, il suono dell'epigonion (uno strumento musicale a forma di arpa dell'antica Grecia) è finalmente disponibile



# Campionamenti multipli per la dinamica

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sono stati generati per ogni nota 127 diversi campionamenti, relativi a 127 livelli di intensità

112 campioni, per un totale di circa 20 GBytes

possibilità di variare la dinamica durante l'esecuzione

natural feeling dal punto di vista dell'esecutore

lo spettro del suono cambia a seconda dell'intensità del tocco, come nello strumento reale

computation time:

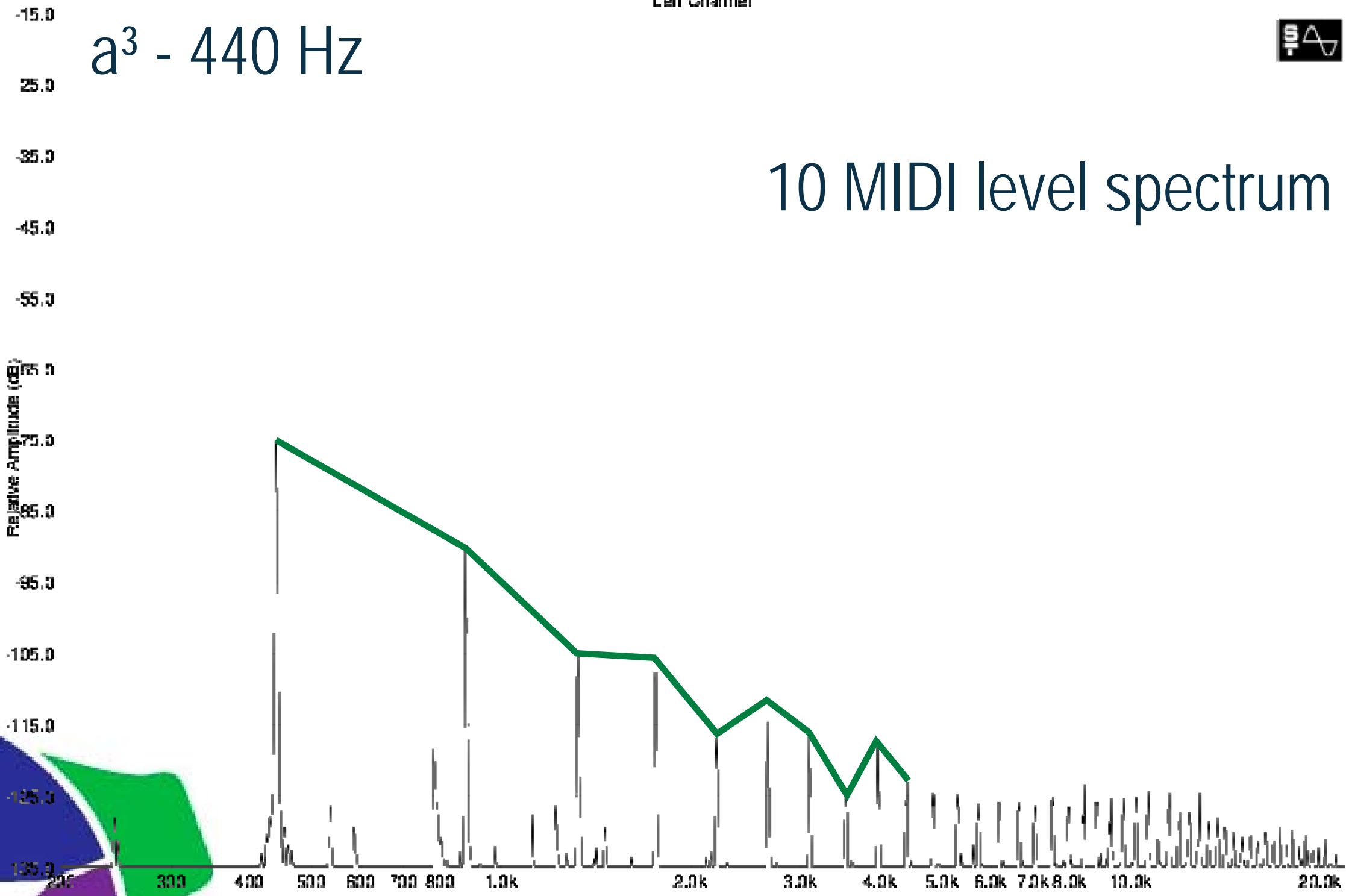
→ circa 10 ore su GRID

→ più di 2700 ore su computer standard



a<sup>3</sup> - 440 Hz

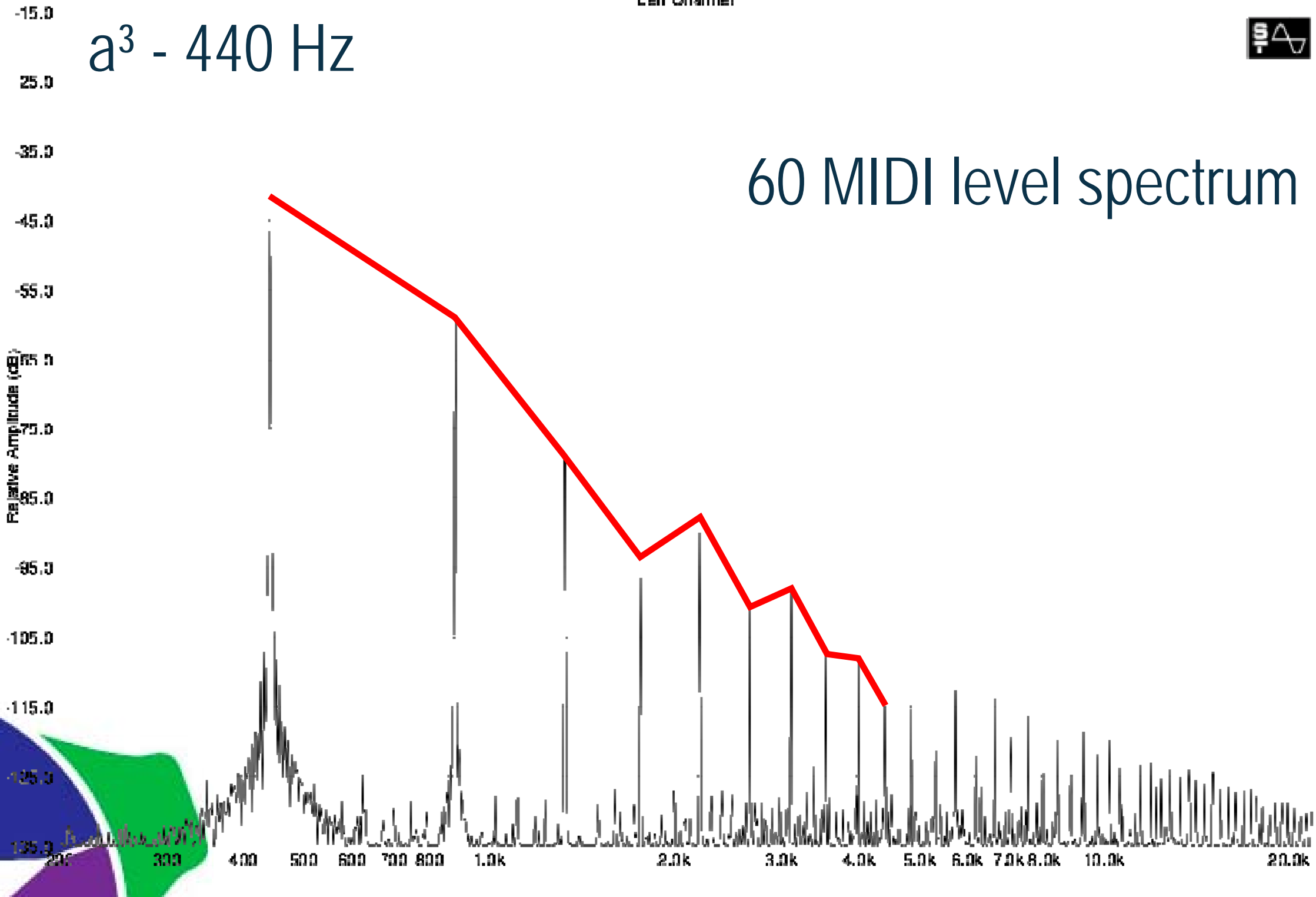
10 MIDI level spectrum





a<sup>3</sup> - 440 Hz

60 MIDI level spectrum

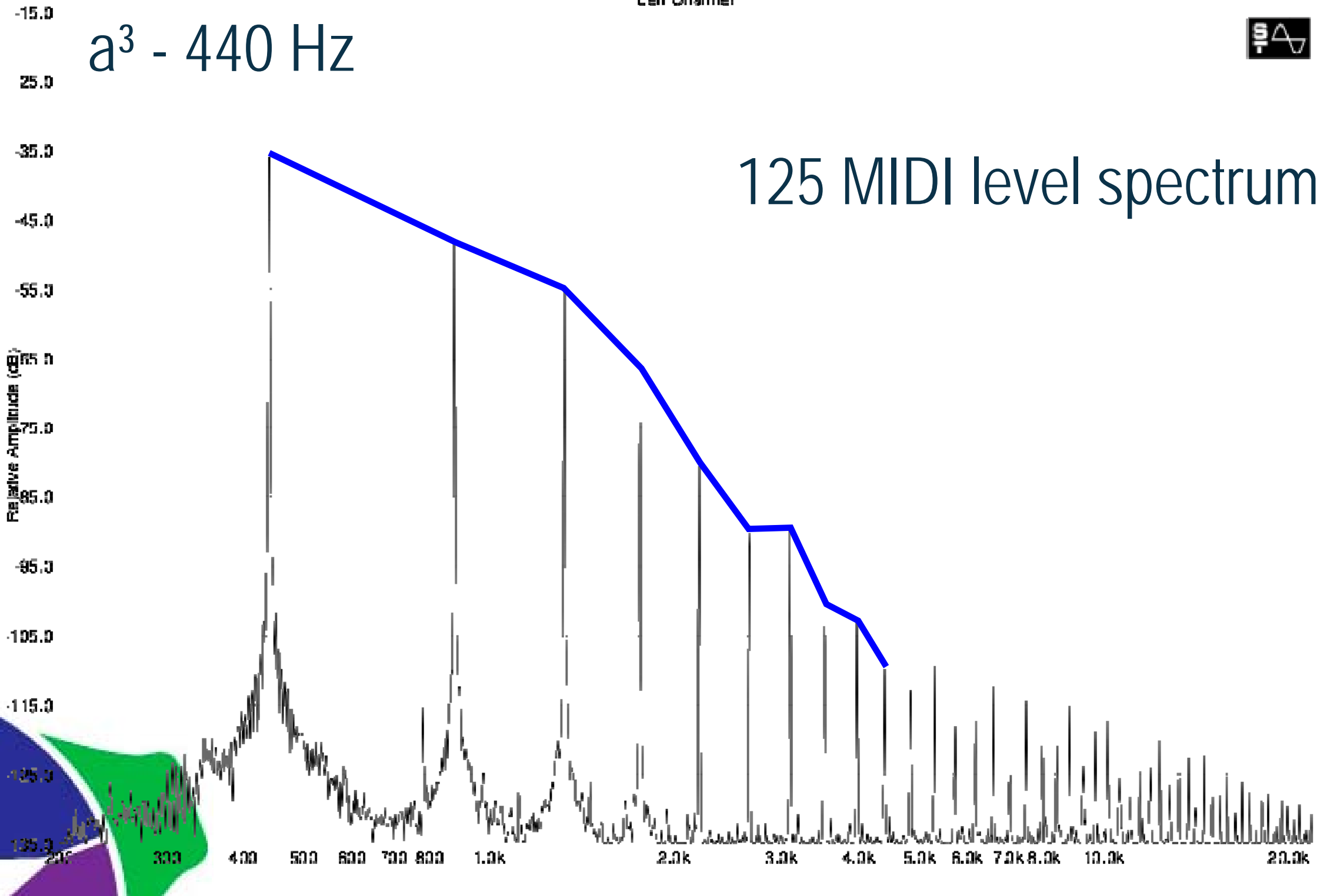






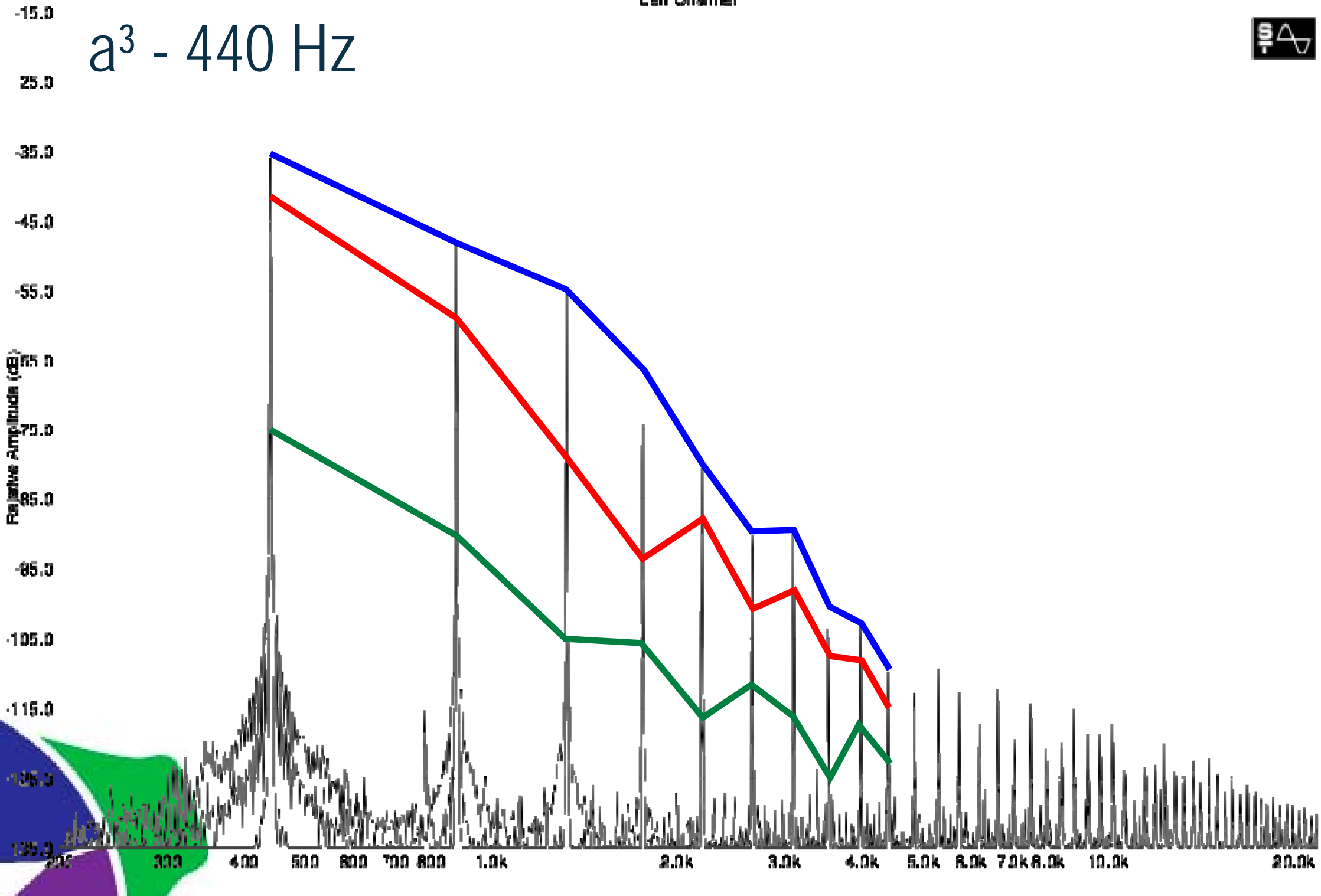
a<sup>3</sup> - 440 Hz

125 MIDI level spectrum





# a<sup>3</sup> - 440 Hz

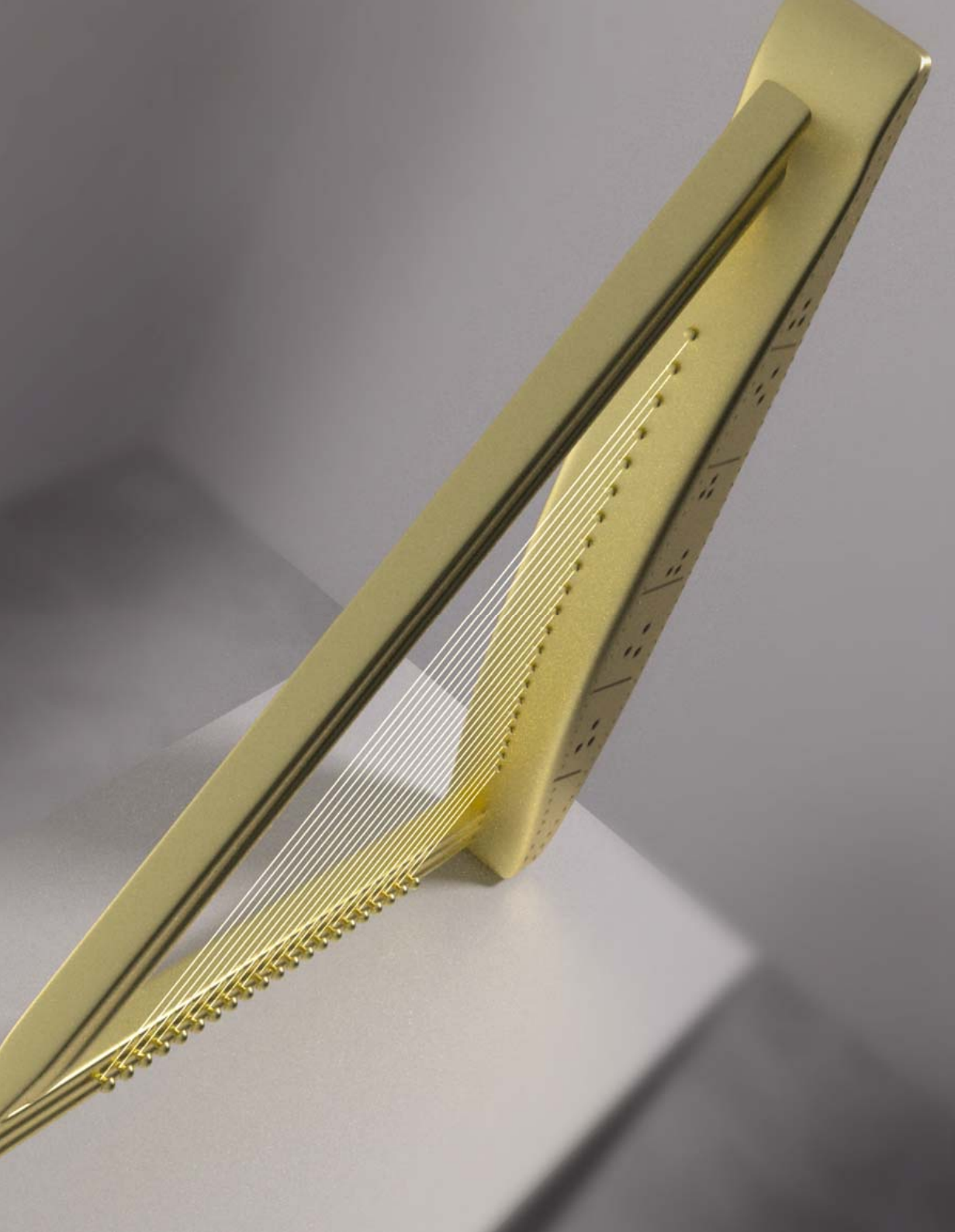


# igunion /1

age from Francesca Baghino and Fausto

zoll  
cStudio - Parma





## epigonion /2

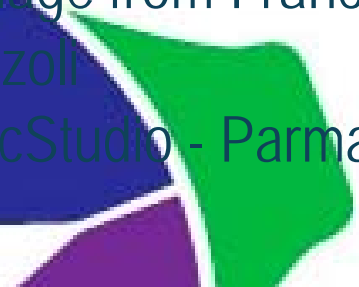
3d image from Francesca Baghino and P  
Ugozzoli  
VisarcStudio - Parma

gonion /3

Image from Francesca Baghino and Fausto

Zoll

cStudio - Parma







barbiton /1

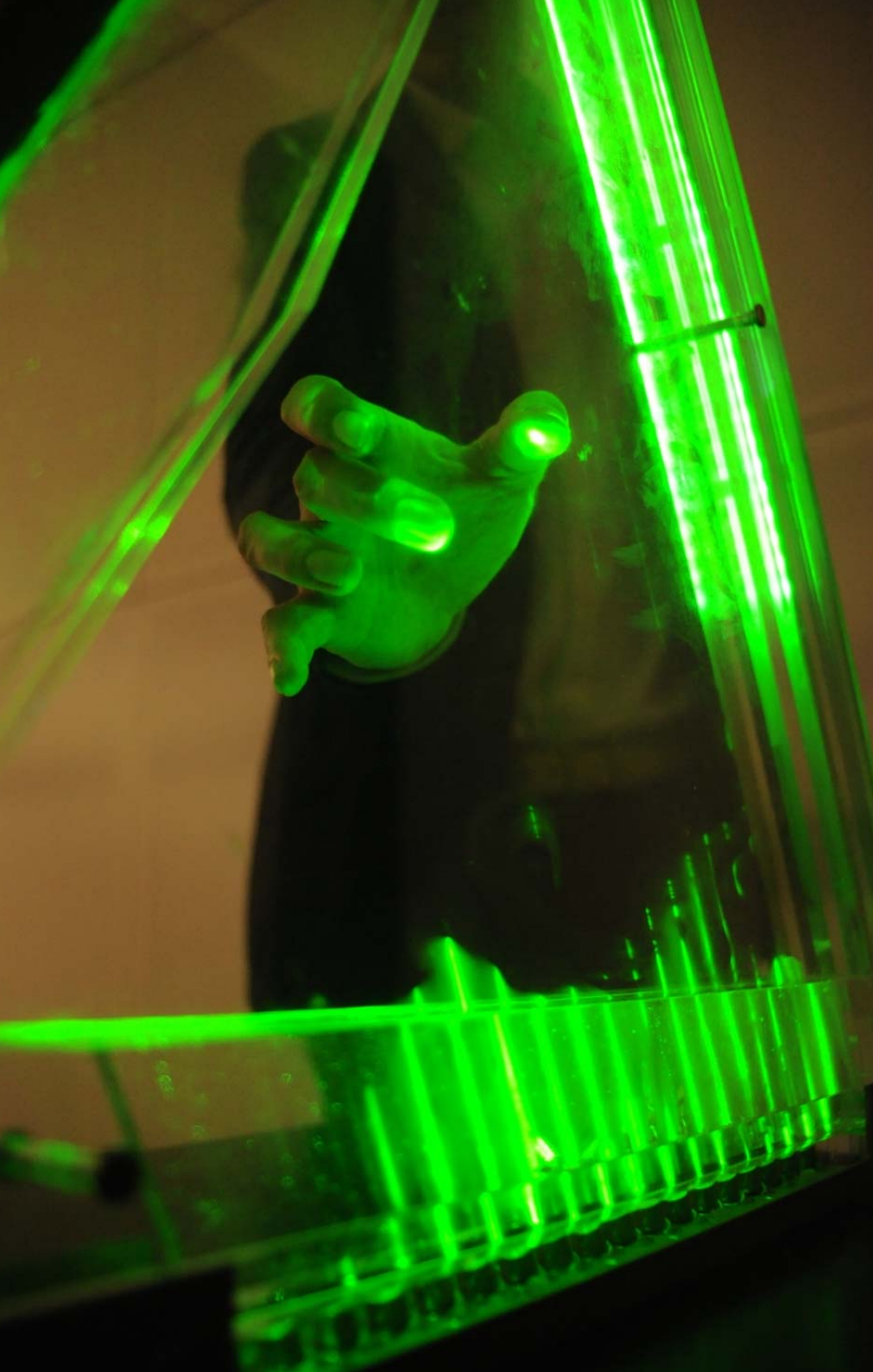
3d image from Francesca Baghino and Fa  
Ugozzoli  
VisarcStudio - Parma

biton /2

ge from Francesca Baghino and Fausto

oli  
Studio - Parma

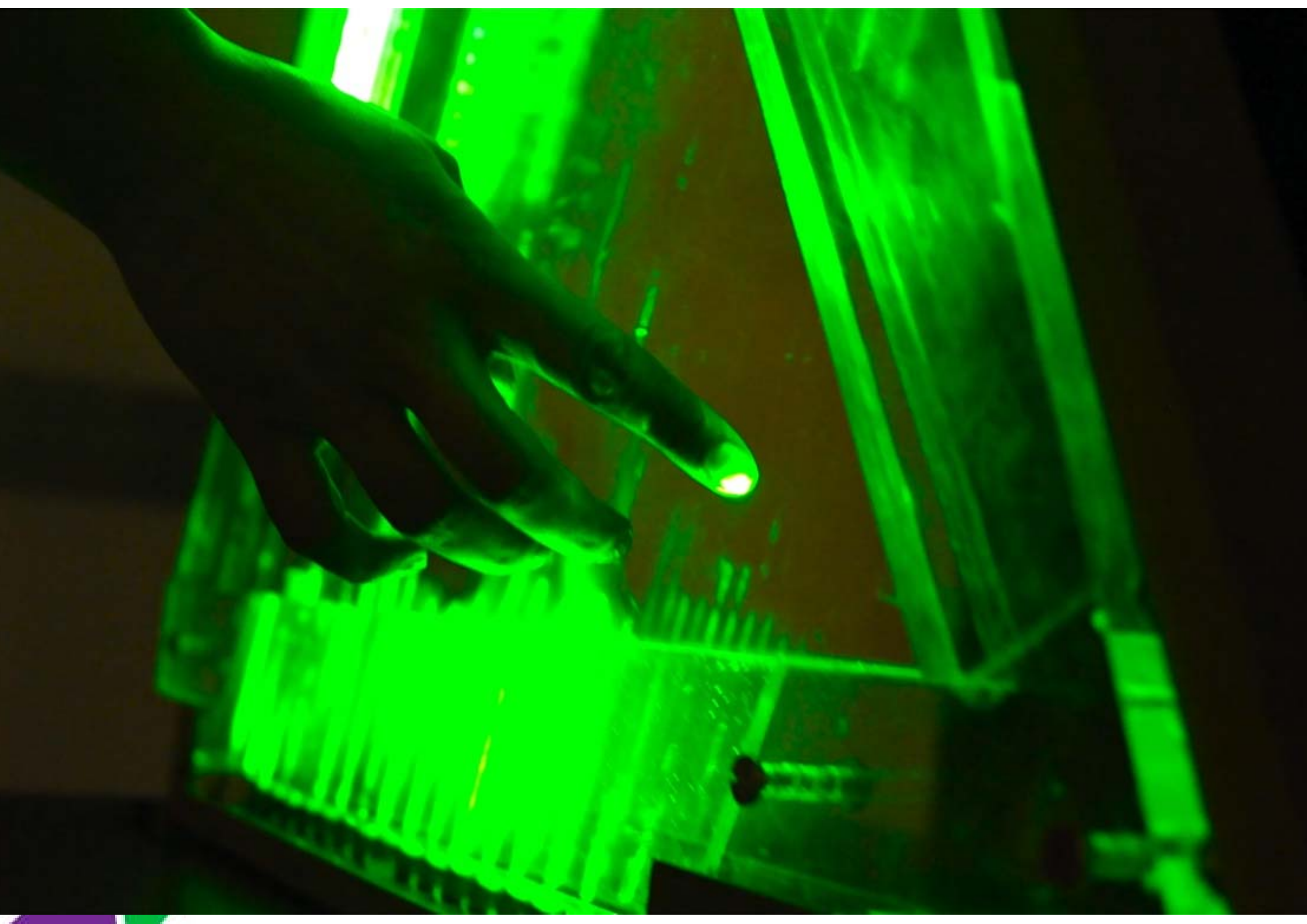




# Laser Epigonion

di Giorgio Ugozzoli

Casa del Suono, Parma





# st Sounds Orchestra

suono dell'epigonion si fonde perfettamente con un ensemble di musica barocca, formato da archi e fiati

tti gli strumenti ricostruiti saranno suonati da uno speciale ensemble: Losounds Orchestra, l'orchestra di ASTRA project

tratta della prima orchestra al mondo composta da soli strumenti ricostruiti su Grid

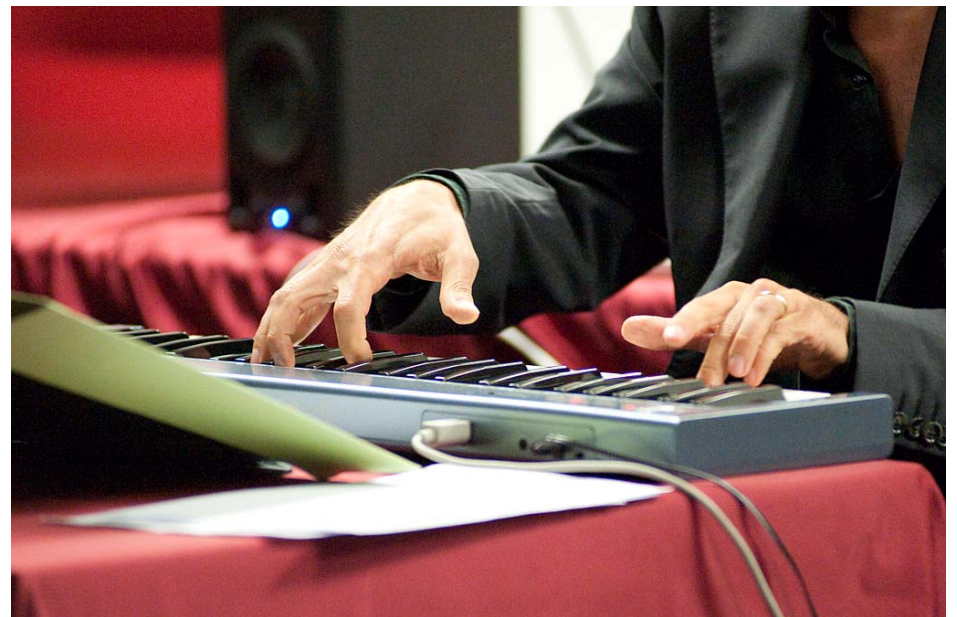




# poli, Festival Note d'Inverno, 14.12.2008, uSOB



# tania, Musica@Fisica, 26.6.2009





Giovanni Paisiello, 12 Divertimenti per Settetto di Fiati

Ensemble di Fiati del Teatro di S. Carlo di Napoli

Prossima uscita il CD su AMADEUS

Utilizzo dell'epigonion per il b.c.







## Achalai

Colaborativa de recuperación musical preHispánica Ancestral Armon

Investigación y tecnología



# Proyecto ACHALAY/CYTED - Red Temática 611RT0424

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**Bolivia:** Universidad Autónoma Tomás Frías de Potosí

**Chile:** Museo Chileno de Arte Precolombino - Universidad de La Serena -  
Pontificia Universidad Católica de Chile - Universidad de La Frontera -  
EUNA - RedCLARA

**Colombia:** Universidad Autónoma de Occidente - Universidad de Ibagué  
Universidad del Atlántico - Asociación Totolincho

**Ecuador:** Pontificia Universidad Católica de Ecuador, sede Ibarra -  
Universidad Nacional de Chimborazo

# Proyecto ACHALAY/CYTED - Red Tematica 611RT0424

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España: Universidad de Málaga - Universidad de Cataluña - Universidad de  
Coruña

México: Universidad Autónoma de México

México: Museo Nacional de Arqueología, Antropología e Historia - Escuela  
Nacional Superior del Folclore José María Arguedas



Flauta sinù de Colombia



Botella sibadora de Ecuador

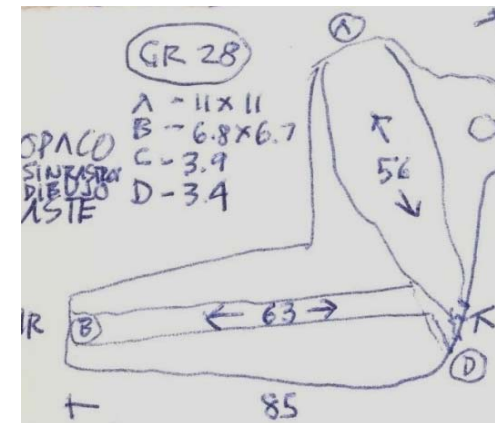
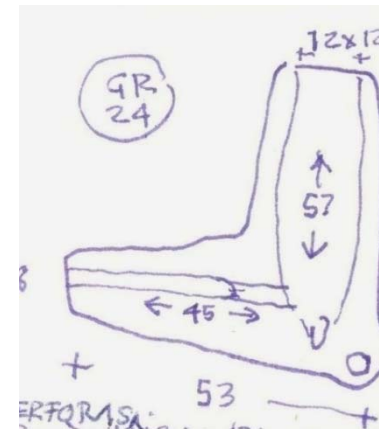
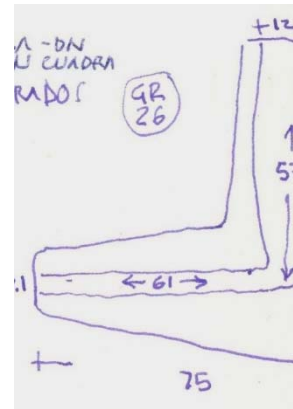


Costa de Perú



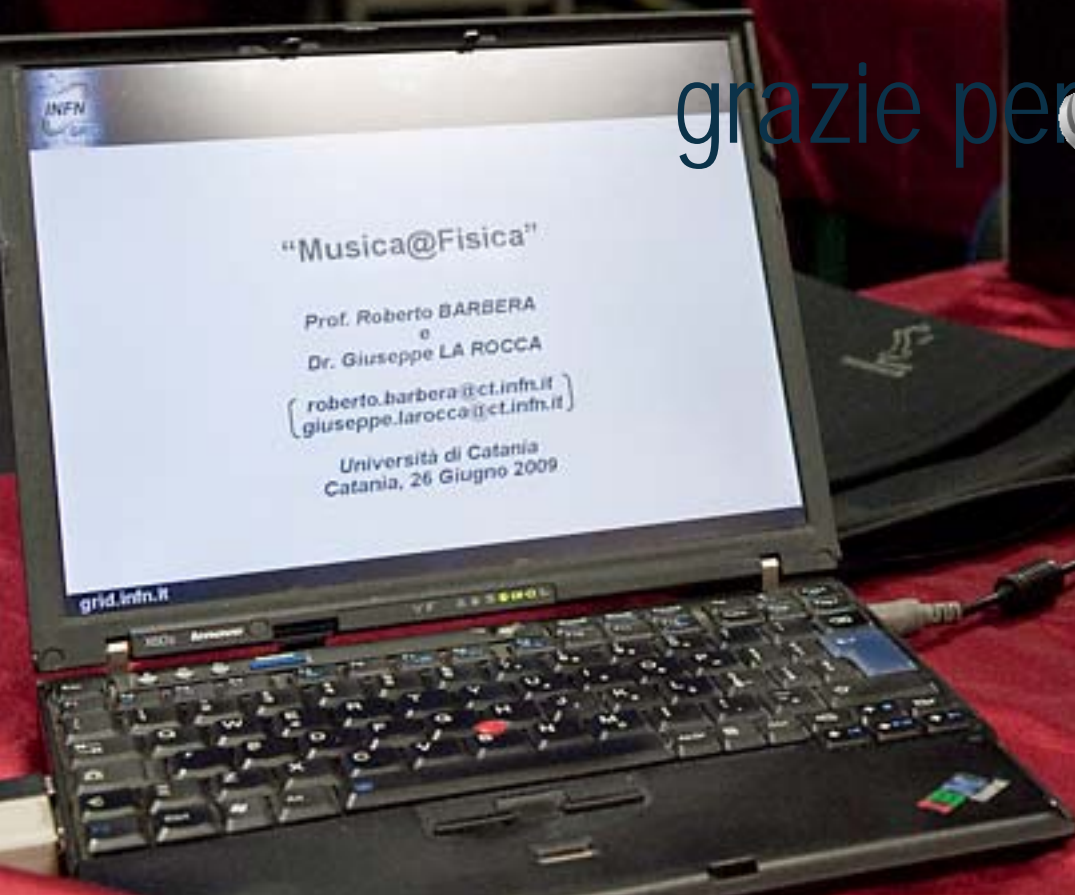


## Anteojos acodada de Chile



Industria lítica de Bolivia





grazie per l'attenzione

