art@CMS - ORIGIN

cross-disciplinary

science education, engagement & networking
Science requires that we continually reassess our place in the cosmos.

“Where do we come from? What are we? Where are we going?”

Great art asks the same questions and when we experience it, it changes our perspective.

Ian Shipsey
Oxford University  UK

“The most beautiful thing we can experience is the mysterious.

It is the source of all true art and all science.”

Albert Einstein
The Question Particle Physics tries to answer with LHC experiments at CERN is

“What is the Universe made of?”
art@CMS: collaborative artist CONSENSUS
CONSENSUS participates as well in science & artworkshops

**UK Rapper launches album CONCERNED**


FERMILAB talk: [http://events.fnal.gov/arts-lecture-series/events/event/rapper-consensus-free-lecture-demonstration/](http://events.fnal.gov/arts-lecture-series/events/event/rapper-consensus-free-lecture-demonstration/)

**More Infor & Links:**

- The BBC interview of ConSensus and Sudan [the sequence starts at 1:11.18 until 1h26.26]
  - [http://www.bbc.co.uk/programmes/p04zv0g0#play](http://www.bbc.co.uk/programmes/p04zv0g0#play)
  - [https://www.youtube.com/watch?v=MIJx9Bq5VTNc](https://www.youtube.com/watch?v=MIJx9Bq5VTNc)
- Press article in the journal “The Voice” and “ProBeta magazine”:
  - [http://www.voice-online.co.uk/article/south-london-geneva-hip-hop-science-lessons](http://www.voice-online.co.uk/article/south-london-geneva-hip-hop-science-lessons)
- Music videos of his 9 tracks album “conCERNed” on youtube
  - [https://www.youtube.com/watch?v=tJl8-ArzkB&feature=youtu.be](https://www.youtube.com/watch?v=tJl8-ArzkB&feature=youtu.be)
  - [https://www.youtube.com/watch?v=1ju3fo37yLE&feature=youtu.be](https://www.youtube.com/watch?v=1ju3fo37yLE&feature=youtu.be)
  - [https://www.youtube.com/watch?v=2UupDCq-LA](https://www.youtube.com/watch?v=2UupDCq-LA)
Supported by

CMS collaboration and global partner

Particle Physics, Evolutionary

ATLAS, ALICE, CMS, LIGO, ICEcube,
Muography, Perimeter Institute,
Canadian Light Source,
and global partner

Particle Physics
Astrophysics
Gravitational Waves
Neutrino-Physics
Muography
Accelerator
Technology

More institutions and experiments under discussion
Interdisciplinary science Engagement & Networking

Help our science community to reach out to the general public and especially young students to relate and engage actively with various science topic via the arts.

“Arts as a tool to engage actively and allow to contribute”
Exhibitions

The outcome of a dialogue and collaboration between artists, art institutes or communities with our science community. An exhibition or performance will act as catalysts for promoting public interest and understanding of science concepts as well as artistic expressions.

no limits of arts, photo, painting sculpture, music, dance, ....

science & art workshops – for graduate and undergraduate students

Interdisciplinary in their nature, SciArt workshops enable young people to gain a better understanding of science, to be inspired and encouraged, and to develop skills that are critical to the challenges of the 21st century.

science learning (masterclass) followed by creative art production – sciARTmasterclass

The exhibition serves always as framework to support activities like: presentations, round table discussions, science and creative workshops, meet real artist or scientists, ....
24th February Cultural Collisions, CERN Meyrin, Geneva / Switzerland
16th March IndianTour / India
April 6th MACT HUB Santa Barbara / US
10th – 24th April ItalianTour / Leonardo da Vinci Museum Milano / Italy
3rd – 10th May RE: Logia – Art/Science / Technology Conference Sofia / Bulgaria
9th – 13th June NHM school competition show, Vienna / Austria
14th – 17th June Four Corners Gallery – Central Saint Martins College of Arts London / UK
17th – 30th June Weisse Haus University Applied Arts final show / Vienna / Austria
21st – 30th June art@CMS vernissage CERN PS, Cessy / France
1st July Mairie de Thoiry, Thoiry / France
22nd – 30th July Palazzo del Cinema, ItalianTour / EPS2017 Venice / Italy
1st – 9th August IndianTour / India
29th Sept – 3rd Oct MuoGrapher art Workshop, Tokyo / Japan
9th – 11th October Science Festival, Podgorica/Montenegro
14th – 28th October ItalianTour / Padua / Italy
23rd – 28th October Science Festival OMN
26th October art@Science Workshop Tbilisi/Georgia
6th Nov 2017 – Jan 2018 UAL final show / London / UK
November IndianTour / India
December BOZAR Brussels / Belgium
artUNIVERSITY Podgorica Montenegro

Dates and venues under discussion:

2018 start ORIGIN
Canada, Japan, Croatia, Montenegro, Bosnia, Georgia, UK, Korea, ...

Jan 5th – 21st Etoire Fico Museum, Turin / Italy
Feb 28th – Apr 10th Cite du Temps, Geneva / Switzerland
Mar 24th – Oct 30th JINR Library Dubna / Russia
Apr 4th – 10th Technapolis - Athens Science Festival / Greece
Apr 14th – 21st Triangle Space Chelsea Coll. Arts, London / UK
Apr 27th – Jul 31st CERN, Prevesinviff, Bl. 774 – Prevesinviff / France
May 1st – 6th Arte & Scienza – Castello Giuasso, Vico Equense / Italy
May 6th Physics Conclave, New Delhi / India
Jun 22nd – Aug 5th art@CMS vernissage & exhibition, CERN, CMS site, Cessy / France
Jul 3rd – 6th SUSy conf. – Melbourne / Australia
Aug 22nd – 30th Global Hands on Universe, HSN, Stord / Norway
Sept 2nd – 9th IMPACT, SBCAST, Santa Barbara / US
Sept 11th – Oct 3rd, IMAGE2016, Ferrary Gallery, Vewey / Switzerland
Sept 19th – 24th, LHChados Split, Palazzo Milesi, Split / Croatia
Oct 3rd – 9th, SCTTWG – TeacherHouse & University Tbilisi / Georgia
Oct 18th – Aug2017 Natural History Museum Vienna / Austria
Oct 25th – 2nd Nov, IEEE, Palais de Congres, Strasbourg / France
Oct 24th – Jun 2017 Landesmuseum fur Vorgeschichte, Halle (Saale) / Germany
Nov 10 Nehru Planetarium- Cosmic Soup-INDIAN tour Mumbai / India
Dec 10th Sambhavna Sci. Festival - INDIA tour Gurgaon / India
Dec 10th - 11th TeacherDays Conference - TeacherHouse Tbilisi / Georgia

Art@CMS Exhibitions 2015:
Jan 22nd – Mar 3rd WELIOS- Galerie Wimmer, Wels / Austria
Feb 2nd – Apr 17th Wilson Hall, FERMILAB / USA
Mar 17th – 22nd Athens Science Festival, Technopolis Museum, Athens / Greece
May 2nd – 31st Art Center South Florida, Miami Beach / US
May 14th – 17th TIF–Helexpo, Thessaloniki’s Science Festival / Thessaloniki / Greece
Jun 24th – Jul 17th art@CMS vernissage, CERN, CMS site, Cessy / France
Jun 26th – Jul 14th KIT – Karlsruhe / Germany
Jul 19th – 31st EPS2015 conference Vienna / Austria
Aug 31st – Sept 5th LHC2015 – St. Petersburg / Russia
Sept 15th – 20th, Castel dell Ovo, Naples / Italy
Sept 19th – Oct 1st, l’Origine, C. Cultures Jean Monet, St. Genis / France
Dec 2nd – 5th, Mediterranean Science Festival / Cyprus

Art@CMS Exhibitions 2014:
Feb 20th – Apr 8th Collegium Hungaricum, Vienna / Austria
Mar 21st – Apr 4th WienerWunderKammer, Vienna / Austria
Apr 4th Science Night Vienna CERN60th Celebration Vienna / Austria
Jun 6th QualysmART Science – Technology – Art, Vienna / Austria
Jun 25th Art@CMS vernissage at CERN PS, Cessy / France
Jul 2nd – 9th ICHEP2014 Conference Science & Art – Congress Palace, Valencia / Spain
Jul 10th – 30th, S. Francis College, New York / USA
Sept 29th – Oct 5th EPI, Split / Croatia
Oct 13th – 30th, CERN 60th Earth&MMan Museum, Sofia / Bulgaria
Nov 15th – 21st, Earth&MMan Museum, Sofia / Bulgaria
Nov 28th – Dec 31st Shoreditch / London / UK
Dec 16th – Jan 2015 Academy-Palace, Brussels / Belgium

Art@CMS Exhibitions 2013:
Feb 11th – 15th VCI Conference, Palais Ferstel, Vienna / Austria
Apr 4th – Jul 10th, Art@CMS opening & exhibition, CERN PS, Cessy / France
Jun 12th – 14th, CMSart Workshop, Joanneum Museum, Graz / Austria
Sep 23rd – 30th, ‘Quantum’, CERN PS, Cessy / France
Sep 27th – 30th, Art@CMS show, CERN OpenDay, CERN PS, Cessy / France
Nov 11th – Dec 13th ‘Art of Science- Beauty in Creation’, RWTH, Aachen / Germany
Nov 28th, US Higgs Discovery Event, Washington / USA
Nov 15th – Jan 2014 ‘Faszination Ursprung’, Bonn / Germany
Dec 12th – Mar 2014 ‘To See a World’, Art@CMS exhibition, CERN PS, Cessy / France

Art@CMS Exhibitions 2012:
Jul 1st – 31st, Science Coffee, Aula der Wissenschaften, Vienna / Austria
Dec 10th – 21st, ‘Art of Science- Beauty in Creation’, CERN Meyrin, Geneva / Switzerland
Exhibitions

Brussels / Academy Palace
Sofia / Earth & Man Museum
London / CLS
Bonn / Deutsches Museum
Athens / Technopolis
FermiLab

Split / Palazzo Milesi
Brooklyn NY

Higgs Discovery Celebration on Capitol Hill
Washington D.C. USA
November 20, 2013

Sofia / Earth & Man Museum
Brussels / Academy Palace
Exhibitions
Landesmuseum für Vorgeschichte Halle Germany
October 23rd 2016 – June 20th 2017
Expected visitors 50 000!

National History Museum NHM Vienna
October 18th 2016 – August 20th 2017
Cooperation: NHM – HEPHY
Expected visitors 500 000!
Workshops

Science&Art@School ECOLINT: https://www.youtube.com/watch?v=yTqDm0Yp04E
Science&Art@School – Cultural Collisions

You are cordially invited to Cultural Collisions
An art exhibition, music and dance performance presented by Austrian and Genevese students

Photos: CERN Bldg 40 became a stage for students

art@CMS INFN Italian Tour has similar activities and creates synergies between various action to inspire students
Science&Art@School – Cultural Collisions

Science&art@school event 2017 in Vienna (June) and the Cultural Collisions event at CERN (February):

This is a Horizon 2020 EU project CREATIONS http://portal.opendiscoveryspace.eu/creations

Photos of the event in the Natural History Museum Vienna June 2017: https://goo.gl/photos/esmfuMAx8Xr5K3V66

Videos of the science&art@school event in the NHM:
- Rhythm of Science: https://youtu.be/DjkH7f1PNpI
- Cultural Collisions – dance: https://youtu.be/Bly_iERk5Ps

Cultural Collisions @ CERN February 2017

Photos: https://goo.gl/photos/2tpnAg7TnsWEjq9q6 https://1drv.ms/f/s!Al-rN-I0kS2sg_gLpGmn7xOEnwjIfQ

Video of a student of the workshop @ CERN: https://www.youtube.com/watch?v=TEsgtwUv6xk

CCC Cultural Collisions CERN – a dance performance by students @ CERN: https://youtu.be/ETjKwUS0yfg
Montenegro Science Festival 2017

Students participating in the CMS Junior Scientist Program art@CMS interdisciplinary Exhibition with: real detector & accelerator equipment, art works, creative corners, lectures and detector workshops as well as sciART workshops.

Montenegro 2017: https://www.youtube.com/watch?v=9vflW-Pf7vg
Athens 2015: https://www.youtube.com/watch?v=tT8MHsCaYks
Venue: Ontario Science Centre, OSC

First exhibition April 9th – 15th 2018
student research and inspiration

Second exhibition: May 29th – June 3rd at OSC: students art-works presentation

A formal evaluation by the Ministry of Education

Organization: creation of ORIGIN
Toronto Ministry of Education: general and education organization, evaluation
art@CMS: Exhibition curation
ORIGIN: Scientific curation
art@CMS, ATLAS, CLS, CMS, LIGO/VIRGO, Muography, Perimeter Institute

More institutions are interested to join: TRIUMF, Snowlab

Science: from Astrophysics to Particle Physics

Art: International art@CMS collaborative artists and local artists

Cultural Collisions by ORIGIN - Canada
## Cultural Collisions Canada – week schedule

### Monday, April 30, 2012
- **Schools**: Cultural Collisions, Endicott College, Toronto (Grades 4 and 11) and University of Toronto Schools (Grades 9 and 11), Oshawa (Grades 11 and 12), Peel District School Board.
- **Events**:
  - **Workshop A**: 9:00 AM – 10:30 AM, **Workshop B**: 10:30 AM – 12:00 PM
  - **Workshop C**: 12:00 PM – 1:30 PM, **Workshop D**: 1:30 PM – 3:00 PM

### Tuesday, May 1, 2012
- **Schools**: Cultural Collisions, Endicott College, Toronto (Grades 4 and 11) and University of Toronto Schools (Grades 9 and 11), Oshawa (Grades 11 and 12), Peel District School Board.
- **Events**:
  - **Workshop A**: 9:00 AM – 10:30 AM, **Workshop B**: 10:30 AM – 12:00 PM
  - **Workshop C**: 12:00 PM – 1:30 PM, **Workshop D**: 1:30 PM – 3:00 PM

### Wednesday, May 2, 2012
- **Schools**: Cultural Collisions, Endicott College, Toronto (Grades 4 and 11) and University of Toronto Schools (Grades 9 and 11), Oshawa (Grades 11 and 12), Peel District School Board.
- **Events**:
  - **Workshop A**: 9:00 AM – 10:30 AM, **Workshop B**: 10:30 AM – 12:00 PM
  - **Workshop C**: 12:00 PM – 1:30 PM, **Workshop D**: 1:30 PM – 3:00 PM

### Thursday, May 3, 2012
- **Schools**: Cultural Collisions, Endicott College, Toronto (Grades 4 and 11) and University of Toronto Schools (Grades 9 and 11), Oshawa (Grades 11 and 12), Peel District School Board.
- **Events**:
  - **Workshop A**: 9:00 AM – 10:30 AM, **Workshop B**: 10:30 AM – 12:00 PM
  - **Workshop C**: 12:00 PM – 1:30 PM, **Workshop D**: 1:30 PM – 3:00 PM

### Friday, May 4, 2012
- **Schools**: Cultural Collisions, Endicott College, Toronto (Grades 4 and 11) and University of Toronto Schools (Grades 9 and 11), Oshawa (Grades 11 and 12), Peel District School Board.
- **Events**:
  - **Workshop A**: 9:00 AM – 10:30 AM, **Workshop B**: 10:30 AM – 12:00 PM
  - **Workshop C**: 12:00 PM – 1:30 PM, **Workshop D**: 1:30 PM – 3:00 PM
Young audience

Rap Workshop

Creative Photo Wall

Cloud Chamber Workshop

Life Size Photo Wall

ICEcube data art work & Educational App

General Science Morning Introduction Talk
Exhibition & Great Conversation Evening

“Science engagement through the Arts”

LHC tunnel Photo wall
Science Centre CEO Maurice Bitrain
Direct dialogue

presentation
Guided tour through the exhibition
Entrance CMS life size photo
Concert at the Royal Music Conservatory
Scott Wilson (BEER) world premier “Dark Matter”

Data Sonification Workshop

World Premier “Dark Matter”

Pre Concert Conversation

OSC data sonification
Life demonstration

Pre Concert Conversation
Student Exhibition Opening – Rap & Dance Performances

Rap performance & HipHop
CERN Cognitive Festival in Georgia
Tbilisi / Georgia - October 22nd – 26th 2018

CERN Cognitive Festival in Georgia
IPPOG masterclass, Junior Scientist program, lectures & workshops
Science and Innovation Festival
22nd – 30th September 2018 Tbilisi / Georgia

Cross-disciplinary exhibition & lectures at the TSU museum for general public and school students
Walk through the exhibition: https://youtu.be/wAYkB5fgyVo
Cultural Collisions
by ORIGIN – Croatia [September 17th – 21st 2018]

workshop program:

- Workshop 1: Thursday 15h
  - Gravitational waves - building interferometers
  - Martin Hendry, Chiara Mariotti, Nikola Godinović with teachers and students from the Science and Math gymnasiums
  - Number of students: about 20 + few teachers
- Workshop 2: Thursday 17h00
  - Higgs boson discovery - event display
  - Claire Adam Bourdarios, Chiara Mariotti, Ivica Puljak with teachers and students from the Science and Math gymnasiums
  - Number of students: about 20 + few teachers
- Workshop 3: Friday 15h
  - Gravitational Waves - extreme processes in the universe
  - Martin Hendry, Nikola Godinović with teachers and students from the Art school
  - Number of students: about 20 + few teachers
- Workshop 4: Friday 17h00
  - Creating musics with physics - Arduino and other platforms programming
  - Chiara Mariotti, Michael Hoch, Ivica Puljak with teachers and students experienced in robotics
    + a teacher of music
  - Number of students: about 20 + few teachers
- Workshop 5: Friday 18h30
  - Origin and evolution of universe
  - Nikola Godinović, Ivica Puljak with primary school teachers and students
  - Number of students: about 20 + few teachers

public lectures program:

Tuesday 18h30 Science & Art - Michael Hoch
Thursday 18h30 Listening to Einstein’s Universe – the Discovery of Gravitational Waves – Martin Hendry
Thrusday 20h00 Round Table Discussion - Understanding the World Through Arts and Science – Nikola Godinovic
Friday 18h30 LHC physics – James Beacham
Cultural Collisions
by ORIGIN - Croatia

Science: from Astrophysics to Particle Physics

- First exhibition September 17th – 22nd 2018  Venue: Old City Hall
  Research & Inspiration for students
- Public presentation and talks during the LHC Days in Split / Palazzo Milesi
- Exhibition: https://youtu.be/XYlDehGg4Xs

Art: International art@CMS collaborative artists and local artists

Organization:
University of Split: general organization
art@CMS: Exhibition curation  ORIGIN: Scientific curation
ORIGIN – South East Europe :
art@CMS, ATLAS, CERN, CMS, LIGO/VIRGO, Muographer, University of Split
• 22 students supervised by Prof. Nathan Cohen, Dr. Andrew Charalambous

• Weekly lectures at the UAL/CSM
  - Lectures from colleagues of Imperial College
  - Visit at CERN 5 days December 5 days May
  - Offered workshops at CERN during May visit
  - Final show in London June and November

Photos: https://goo.gl/photos/VfSSqkg7cN7Ejzs97
University of the Arts London - Saint Martins College of Art
local scientific partner: Imperial College
Vernissage / Exhibitions: June (Labyrinth) November (CSM) 2017
University of the Arts London - Saint Martins College of Art
local scientific partner: Imperial College
Windows Gallery Exhibition CSM - Nov 2017 Jan 2018 – Symposium No
Applied Arts University Vienna
local scientific partner: HEPHY
2 semester sciART course October 2016 – June 2017

• 2 x 11 students / 11 staff
• Weekly lectures at the Applied Arts University
  • Visit & Lectures from colleagues of HEPHY & TU
  • Visit at CERN 5 days December
  • Artwork rehearsal March
  • Particle detector construction workshop March
  • Final show in Vienna June

Photos: https://goo.gl/photos/i6MqYfwCRgnNVs4N9
Applied Arts University Vienna
local scientific partner: HEPHY
Vernissage / Exhibition June 2017
Chelsea College of Arts London
1 semester sciART course  October 2014-2015-2016

• supervision Prof. Dave Webster
• Weekly lectures and discussions at UAL
  2014/2015 Visit at CERN with 4 students + 4 trainees Shoreditch Trust
  2015/2016 - Visit at CERN 5 days, Final show  TriangleSpace London June
sciARTbooklet
a manual for an art and a science teacher to re-create and create topical artworks
art@CMS 2017

1. Introduction

When I left school I went to work as a technician for the Physics and Astronomy department at a university in London. I trained as an engineer and spent many years designing and building equipment for the research groups there. My interest in science grew as I worked with these groups and got a better understanding of the science they were researching. I loved my job because it gave me so much insight into the science involved.

When I left that job and started as an artist I found that the excitement of science was something I didn’t want to move away from. So, I decided to use science as the inspiration for my art. Most of the art I make comes from some bit of science that has seeded an idea. Science is a tool for letting us see our world more clearly, and for me it also inspires my work. By the way, I have not moved very far from the university I worked at. I am Artist in Residence for the Astronomy group and the High Energy Physics groups there, as well as being part of the art@CMS project run by Michael Hoch at CERN.

UK collaborative artists:
Rachael Nee, Andy Charalambous

in preparation:
“data sonification” by Federico IT, “particle detection” by Ch. Henschke AU

Orders of Magnitude – Potato Powered Cosmos
a construction manual
Rachael Nee in collaboration with HST Programme 2017

1. Introduction

This booklet is written for science and art teachers with the aim of interdisciplinary learning. It assumes no knowledge of the other disciplines subject. In it you will read about the art installation from both the science and art viewpoints and how to reconstruct it. This becomes a jumping off point for the development of new artworks by High School students, with questions along the way.

Science and contemporary art have different end goals; however, they also have a lot in common. Both contemporary art and science have similar methodologies involving; investigation, research, testing out of ideas and theories through experiment. They share imagination, curiosity, quest for knowledge and are forms of inquiry. When successful both allow the world to be seen in new ways.
Combining the imageries of the machinery of CERN with the curvilinear environment of the Architects of Air dome creates an incredibly intriguing layer of visual experience.

art@CMS & Architects of Air

is a synthesis of 2 unique partners whose core activity address the wonder of light and the wonder of the universe.
THANK YOU for you attention