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## France Jobin + Markus Heckmann

Entanglement - Photos by Bruno Destombes

France Jobin and Markus Heckmann started working together in 2019 on their first DUO collaboration with sound artist Richard Chartier. DUO was presented at Mutek in 2019 and at the Prextce Festival in South Korea. In 2021, Markus and France collaborated on a new audiovisual project, Entanglement.

Entanglement is an artistic project at the crossroads of scientific research inspired by the concept and properties of quantum entanglement and quantum field theory. The sources of inspiration for France Jobin and Markus Heckmann are based on the two current dominant theories explaining quantum entanglement: the Copenhagen interpretation and the multiverse (quantum decoherence). To these two theories are added the fluidity of time and the principle of quantum entanglements. The Entanglement performance, the XR and the dome versions are inspired by the same theories; an ambitious immersive experience presented as a world premiere during the 22nd edition of MUTEK.

To see DUO - [here](#)

To see Entanglement (except) - [here](#)

To see Entanglement XR- [here](#)

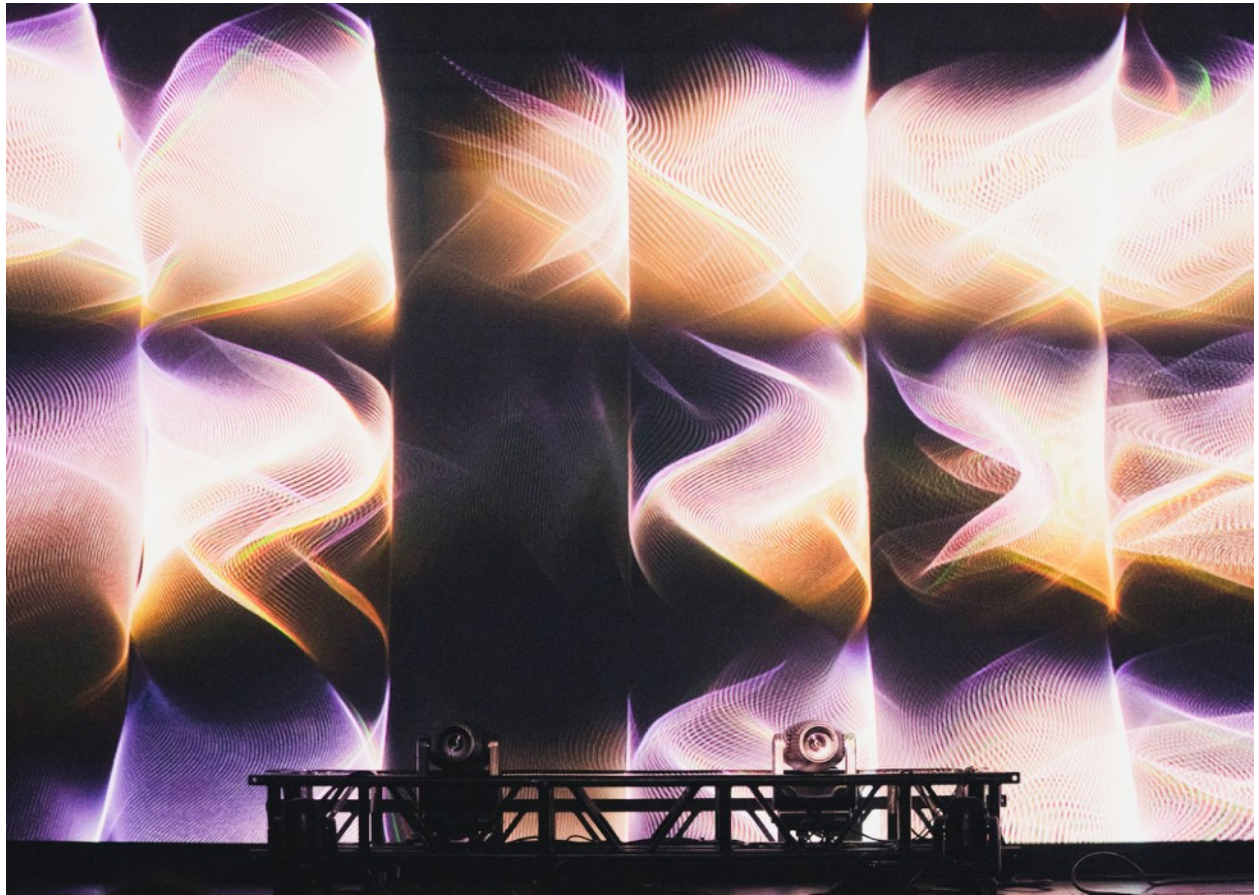
To note: Entanglement XR is an extended reality project - viewing the trailer does not convey the full immersive experience of the Oculus headset,

To see Entanglement dome (except) - [here](#)

*Entanglement AV*





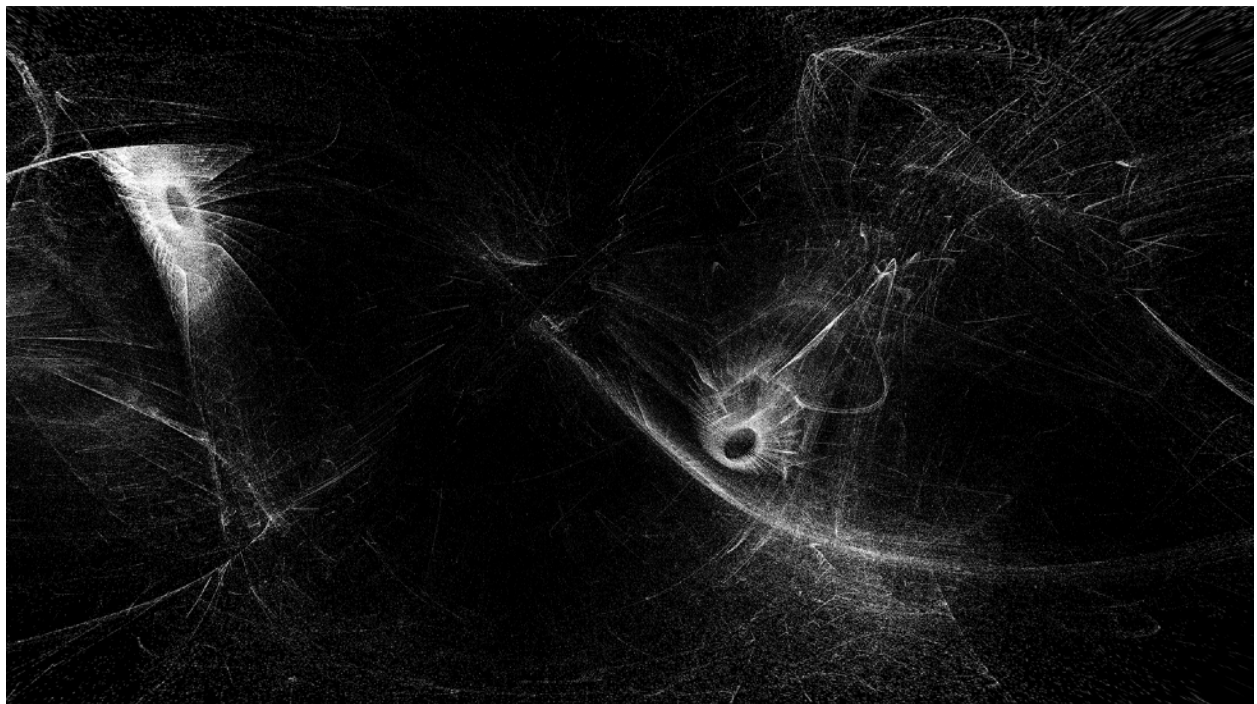






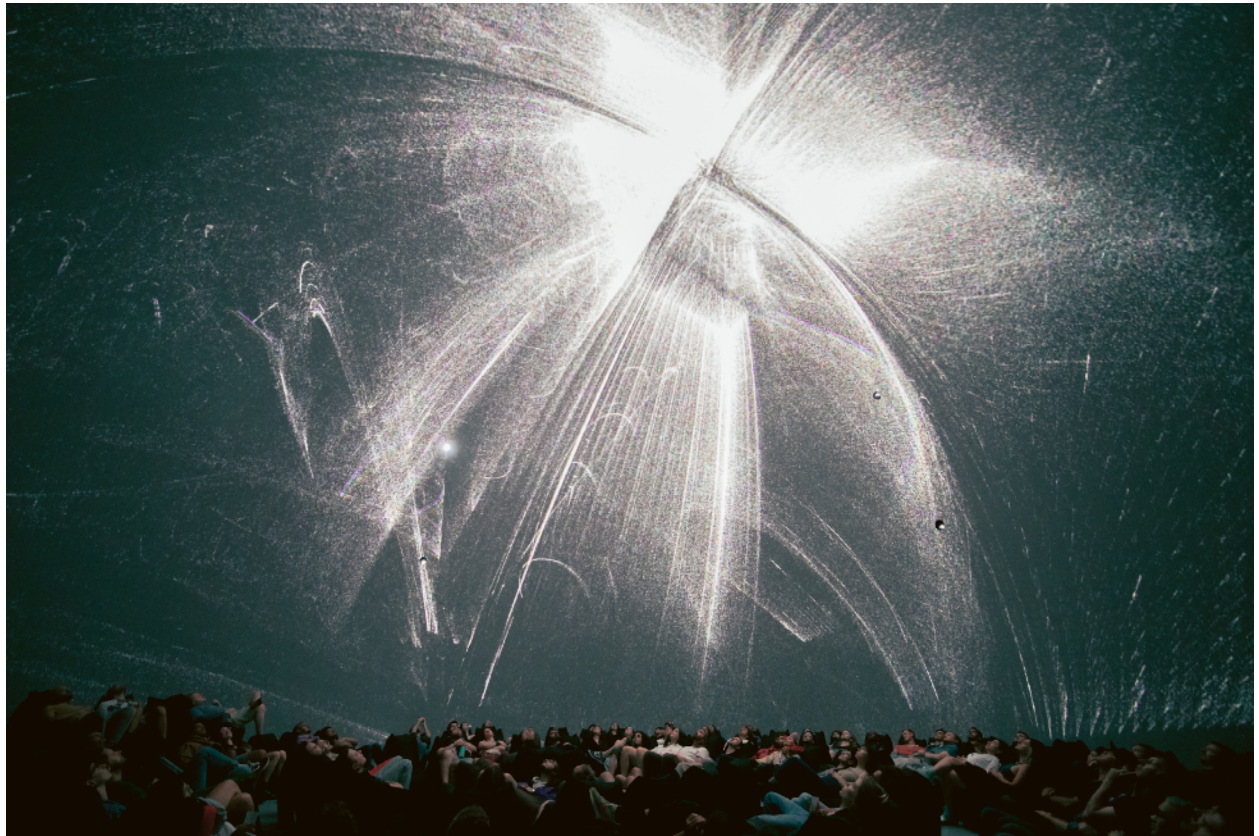
### *Entanglement XR*

Comment from Mr Sebastián Duque Mesa - MSc in physics, on one of the photos of Entanglement XR I posted on IG , this is before I met him and we have been collaborating since.: *"If looking for a "feeling" of quantum, Entanglement XR is by far the best shot to picture it. Simply beautiful!"*





Entanglement Dome at SAT Montreal

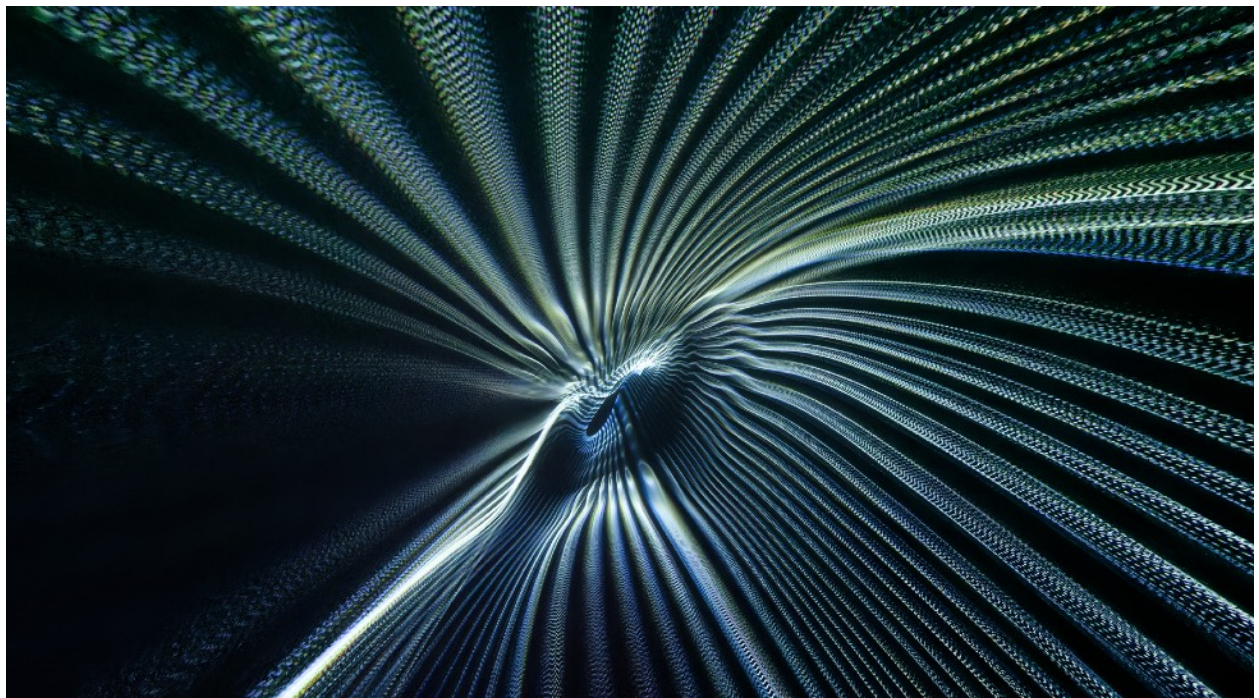




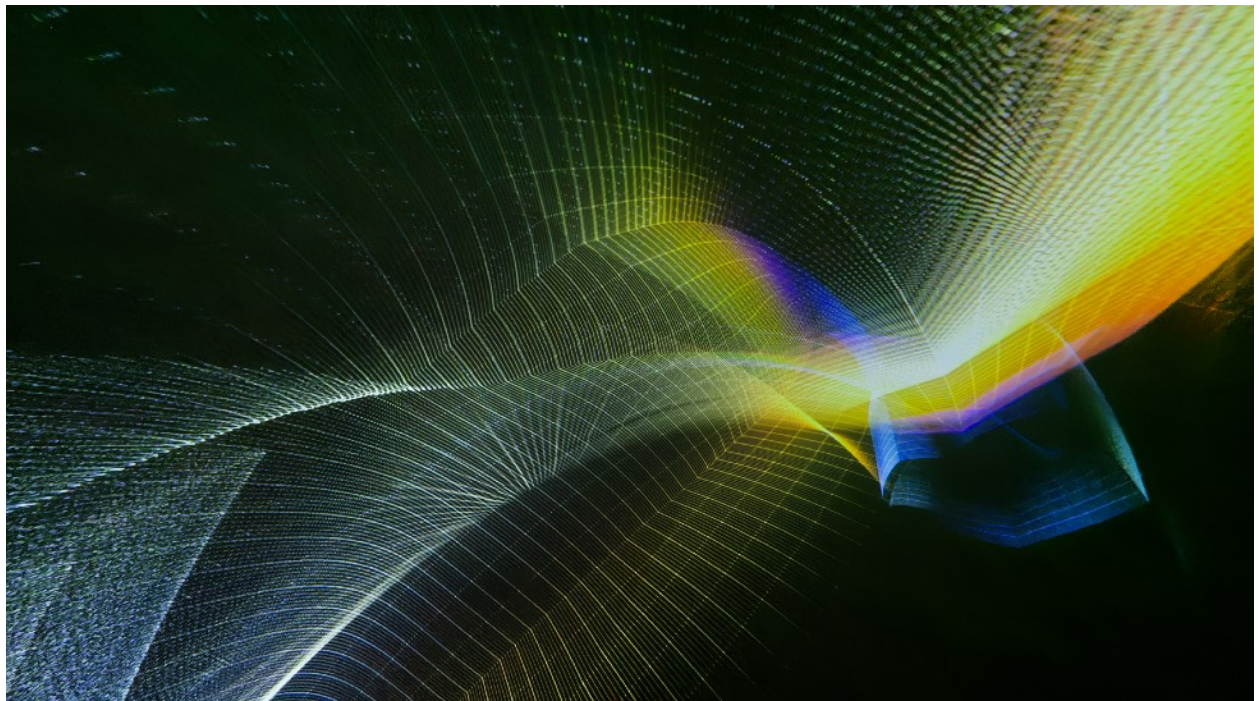




*Entanglement Dome at the Zeiss Planetarium, Berlin - Photos by Udo Siegfriedt*









**Coordinates**

France Jobin  
53-900 Sherbrooke West,  
Montreal, Qc,  
H3A 1G3

Mobile: +1 514 662 4709

Markus Heckmann  
1722 Queen Street West  
Toronto, Ontario  
M6R 1B3

Mobile: +1 416 732 2844

**France Jobin** is a sound / installation / artist, composer and curator residing in Montreal, Canada. Her audio art can be qualified as "sound-sculpture", revealing a minimalist approach to complex sound environments where analog and digital intersect. Her installations express a parallel path, incorporating both musical and visual elements inspired by the architecture of physical spaces. Her works can be "experienced" in a variety of unconventional spaces and new technology festivals across Canada, the United States, South America, South Africa, Europe, Australia, Japan and South Korea. Since 2009, her focus has been related to Quantum mechanics. Many of her projects are inspired by theories related to topics such as vacuum decay, string theory and more recently, what she feels to be the most perplexing phenomenon in the world of the quantum , entanglement resulting in a first presentation, *Entanglement A/V*, with visual artist Markus Heckmann, which delves into the realms of quantum physics premiered at Mutek Mtl 2021.

Jobin has created solo recordings for Editions Mego (AT), No-ware (CL-DE), Silent Records (USA), popmuzik records (JP), bake/staalplaat (NL), ROOM40 (AU), nvo (AT), DER (US), ATAK (JP), murmur records (JP), Baskaru (FR) and the prestigious LINE label (US). Jobin's sound art is also part of countless compilation albums, notably on the ATAK (JP), bremsstrahlung (US), Mutek (CA), murmur records (JP), and/oar (US), tsuku boshi (FR), everest records (CH), and Contour Editions (US) labels. She is also featured in the influential book and recording, *Extract, Portraits of Soundartists* (book + 2 cd), released on the nonvisualobjects label (AT). The collaborative album *ligne*, created with sound artist Tomas Phillips, was released on the ATAK label (JP) and her recent collaboration with acclaimed artist Richard Chartier, *DUO*, is released on the mAtter label in Japan.

*DUO A/V* premiered at Mutek Mtl 2019 with sound artist Richard Chartier and visual artist Markus Heckmann and was presented at the Precxte festival in South Korea.

Her latest project *Entanglement*, is related to quantum physics and the first iteration is *Entanglement AV*, an audio visual live performance created with visual artist Markus Heckmann. It was premiered at Mutek Montreal in August 2021. Since the premiere, they have presented it at Mutek ES in March 2022, at INDEX - Biennale of media arts in Braga Portugal, at GAS festival in Göteborg, Sweden, Mutek MX and Mutek JP. An XR version has also been created and has been touring worldwide since the launch of the Mutek Immersive Collection in August 2022. A third iteration - *Entanglement dome* - was presented at SAT Montreal and at the Zeiss planetarium in Berlin in 2023.

Her installations and screenings have been shown internationally at museums and festivals. Her work *P Orbital* released on LINE (Valence, LINE054) was presented in the context of *ESCUCHAS*, a first sound art exhibit for the Museum of Modern Art in Medellin, Colombia. *P Orbital* was also presented at *CONTEXT-ing / Listening as CONTEXT* at the Miami Art Fair in Florida, *Call & Response*, London UK as well as at the *Haunted formalism* exhibit in LA curated by Volume. An invitation to the AIR Artist-In-Residence program in Krems, Austria enabled her to create *und transit*, a sound installation set in the MinoritenKirche cloister in Stein (AT) and *und transit.03* has been presented in the sound art exhibit "*Dock*" at the Ancien Palais de Justice in Liège, Belgium.



Her two collaborations with visual artist Cédric Eymenier (FR) have resulted in *EVENT HORIZON*, an audio/video piece, and *The Answer*, a movie, with the soundtrack by France Jobin and Stephan Mathieu. *EVENT HORIZON* was screened in Paris (2010), at the Venezuela Biennale in Merida state (2010) and was performed live at the Torrance Art Museum in Los Angeles (2010) and ISEA RUHR 2010 (DE). *The Answer* was screened at IAC, Villeurbanne, France in March – May 2016. In 2011, Jobin was one of five international artists selected to present her sound installation, *Entre-Deux*, in the new media exhibit Data/Fields, curated by Richard Chartier at Artisphere in the Washington, DC area, along with Ryoji Ikeda, Mark Fell, Caleb Coppock, and Andy Graydon. Her proposition received critical acclaim from the national press. *Entre-Deux* was presented at N38E13 in Palermo, Sicily (2017).

She premiered the audio visual performance of “*intrication*” at Mutek AR 2018 with the Argentinian visual duo prifma. Her audio visual collaboration: “*Mirror Neurons*” with sound artist Fabio Perletta (IT) and xx+xy visuals (IT) was screened as a world premiere at A x S / ak-sis / FESTIVAL 2014 | CURIOSITY as part of the Synergetica Screening in Los Angeles in September 2014. In October 2015, France was invited to take part in an artist residency at EMPAC (Troy, NY) which resulted in the creation of a new light sound work entitled 4.35 - R0 - 413, a collaboration with Alena Samoray, lighting designer.

Her latest installations, ‘*Inter/sperse*’ and ‘*Entre/temps*’ both premiered in Italy. ‘*Inter/sperse*’ is a site specific installation created in the context of an international residency organized by Museolaboratorio, LUX and farmacia901. It opened May 27 2017 at Museolaboratorio, Città Sant’Angelo Italy. ‘*Entre/temps*’ is a site specific installation commissioned by Enzo De Leonibus, artistic director of the EaRrEt-Mel festival which opened in Palena, Italy, June 4 2017.

She has also participated in numerous music and new technology festivals such as Mutek (Montreal, 2001, 2004 – 2009, 2014, 2017, 2019 AR 2018), Festival Novas Frequencies (Rio, Brazil, 2019) Prectxe (South Korea, 2019), Interference (Austin, 2019), Suoni Per Il Popolo (Montreal 2019), EM15 (Montreal 2014), EMPAC (US 2011, 2015), roBOT 8 (Italy 2015) Angelica Festival (Italy 2016), Portobeseno (Italy 2014), Interferenze - Liminaria (Italy 2014), Fluss Media Arts Festival (Italy 2014), FIMAV, SEND + RECEIVE (Winnipeg, 2003, 2005), Club Transmediale (Berlin, 2004), Shut up and Listen (Vienna, 2009), ISEA RUHR 2010 (Germany), the surface tension tour (Japan, 2012) and the Symétrie tour (Japan 2016).

“*immersound*” is a concert event/philosophy concept initiated by Jobin, which proposes the creation of a dedicated listening environment by focusing on the physical comfort of the audience within a specifically designed space. The premise of “*immersound*” is to seek out/explore new perceptions in and experiences of the listening process by pushing the notion of “*immersion*” to its possible limits. She created and produced “*immersound*” from 2011 to 2015 at Oboro in Montreal.

Jobin’s work continues to evolve as technologies enable her to create new environments.

France Jobin is published by Touch Music/Fairwood Music UK Ltd

**France Jobin**

**Podcast:** FRANCE JOBIN: THE SONIC, THE ARCHITECTURE AND THE QUANTUM PHYSICS

My most extensive interview related to Quantum Physics.

**DISCOGRAPHY** (selection related to science)

2020	Death is perfection, everything else is relative	Vinyl	Editions Mego (AT)
	<a href="#">Listen</a>		
2018	Intrication	CD	No-ware (CD-DE)
	<a href="#">Listen</a>		
2016	Singulum	CD	LINE (USA)
	<a href="#">Listen</a>		
2014	The illusion of infinitesimal	CD	Baskaru (FR)
	<a href="#">Listen</a>		
	Quark - How Does The Invisible Sound	DIG	901 Editions (IT)
	<a href="#">Listen</a>		
2012	Valence	CD	LINE (US)
	<a href="#">Listen</a>		
2008	10 <sup>-33</sup> cm	DIG	ROOM40 (AUS)
	<a href="#">Listen</a>		

**PERFORMANCES** (live)

2019	Séquence K		Krenek Institute - Austria
	<a href="#">View</a>		
2019	DUO		PRECTXe festival, Seoul, (SK) Mutek Montreal, (CA)
	<a href="#">View</a>		
2019	Intrication- Dance choreographer Nora Gibson		Fels planetarium, Philadelphia, (USA) Dance choreographer Nora Gibson
	<a href="#">View</a>		
2018	Intrication with Prifma		Mutek Buenos Aires (AR)
	<a href="#">View</a>		
2015	4.35 - R0 - 413		EMPAC - Concert Hall, Troy, NY (USA)
	Rennselaer polytechnique institute		24 speakers
	<a href="#">View</a>		

**EXHIBITS-INSTALLATIONS**

2020	Singulum - s		AV collaboration
	<a href="#">View</a>		
2017	INTER/SPERSE		Museoolaboratorio, (IT)
	<a href="#">View - catalogue</a>		



### Installation & workshop

Soledad - September 2018 - Museo de Arte Moderno de Medellin - LAB3



**Inter/sperse Sound installation - 11 rooms at Museolaboratorio - 2017**

Room 5







### Escuchas - 2015-2016 (in Spanish)



!

Foto: Jhon Alexander Chica Yara

Jorge Bejarano (izquierda), curador de Proyectos Especiales, y Miguel Isaza, curador de la exposición Escuchas, en el Lab 3 del Museo de Arte Moderno de Medellín.

Twitter: @danielgrajalest

En el Lab 3 del Museo de Arte Moderno de Medellín, uno de sus nuevos atractivos, el sonido es el arte que se exhibe, esta vez no colgado en las paredes, ni en pedestales en el suelo, no hay esculturas ni pinturas, tampoco es una instalación artística, son ambientes creados por sonidos, a los cuales sólo basta cerrar los ojos para llegar. No hay nada para ver, se trata de escuchar, de que la mente sienta el arte a través de las emisiones sonoras y viaje a las geografías que proponen los artistas sonoros, creadores que se han concentrado en producir obras que no son visuales.



Esta vez la cita es con doce creadores: Alejandro Cornejo (Perú), Budhaditya Chattopadhyay (India), David Vélez (Colombia), Edu Comelles (España), Fabio Perletta (Italia), France Jobin (Canadá), John Grzinich (Estados Unidos), Manrico Montero (México), Robert Curgenvén (Australia), Simón Whetham (Reino Unido), Yann Novak (Estados Unidos) y Yannick Dauby (Francia), se trata de la exposición Escuchas, una selección de arte sonoro actual, que estará abierta desde hoy a las 6:30 p.m. y se extenderá hasta el 27 de marzo de 2016.

“Desde que comenzamos a pensar el espacio del Lab 3, a investigar, hemos definido una tipología de experiencias en las cuales se alberguen prácticas experimentales a partir del sonido, experiencias de escuchas y espacios de discusión sobre experimentación. Es paradójico que no hay referentes en Medellín ni en Colombia, cuando en países como México llevan cerca de 30 años en la exploración con arte sonoro, que en esta que es la ciudad innovadora no sea tan cercana en las artes tecnológicas. El arte sonoro como disciplina de creación diferente a la música, y lo que queremos con estos espacios, con las exposiciones y las citas académicas, es que se ponga en conversación y se generen reflexiones sobre esta práctica”, asegura Jorge Bejarano, curador de Proyectos Especiales del Mamm, quien lidera la exposición.

Miguel Isaza, investigador y experto en arte sonoro, quien estuvo a cargo de la curaduría de esta muestra, explica que “Escuchas es una selección que tiene en cuenta la pluralidad, a propósito de toda la discusión que hay entre las diferentes prácticas del sonido, que viene de los diferentes modos que hay de escuchar, de las diferentes maneras que existen para valorar el fenómeno del sonido. Normalmente se contraponen por qué es música y por qué es arte sonoro, pero las categorías son formas de apropiarnos del discurso, tanto en la música, como en el diseño sonoro, como en el arte sonoro, está el sonido. Por ello, la exposición está enfocada en obras que son hechas para escuchar, que reflejan la diversidad a la hora de escuchar el sonido, permiten varias escuchas”.

Isaza precisa que detrás de todas las obras “hay reflexiones sobre los materiales, sobre el espacio, sobre la vibración y eso permite replantear ciertos valores que normalmente son como del dominio de lo visual y eso es lo que el arte sonoro tiene para aportar que es un poco la crítica a lo visual, a lo conceptual, a un discurso que nos haga siempre ver cosas, el sonido es un dispositivo crítico a toda esa dictadura de lo visual”.

Así, su propuesta curatorial tiene que ver con un recorrido desde India hasta Australia, pasando por Colombia, España, Perú, que tiene como fin “mostrar cómo se replantea el arte sonoro dependiendo de dónde está”.

Entre los artistas de Escuchas están Manrico Montero (México), quien “realizó una obra con sonidos de la selva amazónica boliviana, la cual tiene sonidos de insectos, anfibios, es un poco hipnótica, porque juega con esa cacofonía de lo natural; a su vez, el canadiense France Jobin trabaja el microsonido, con lo minimalista y es difícil reconocer las fuentes, el dónde grabó, no hay una referencia documental, sino los impulsos emocionales de la artista para crear la obra.

Por Colombia, el artista invitado fue David Vélez, quien, concluye el curador, comparte “una obra en la que está muy presente el oxidado, el cómo en la materia se reflejan procesos de conciencia, lo que se pierde pero que conserva un valor estético enorme en el tema sonoro”.

**Communiqués de presse** (related to science)  
**2020**

Death is perfection, everything else is relative Vinyl Editions Mego (AT)

The last two years have seen me maintaining an association with an unusual bedfellow, death. The loss of Mika Vainio, as well as three members of my own family, has had a profound effect on me and spurred a lengthy reflection on life, death, and everything in between.

Parallely, while studying the philosophy of science, I came across shadow photons:

"Tangible photons are the ones we can see or detect with instruments whereas shadow photons are intangible (invisible) detectable only indirectly through the interference effects on the tangible photons.

There is no intrinsic difference between tangible and shadow photons: each photon is tangible in one universe and intangible in all the other parallel universes.

Shadow photons would go entirely unnoticed, were it not for this phenomenon and the strange pattern of shadows by which we observe it.

They travel at the speed of light, bounce off mirrors, are refracted by lenses, and are stopped by opaque barriers or filters of the wrong colour. Yet, they do not trigger even the most sensitive detectors. The only thing in the universe that a shadow photon can be observed to affect is the tangible photon that it accompanies. This is the phenomenon of interference.

Thus the existence of a seething, prodigiously complicated hidden world of shadow photons has been inferred."\*

I have drawn a parallel between shadow photons and death. The interference phenomena, parallel universes, and how shadow photons affect tangible photons they accompany, offer, in my opinion, similarities, an unknown universe which is death and how we, remaining tangible human beings, are affected. This quest has led me to be more willing to accept chaos in my life and to conclude that Death is perfection, everything else is relative.

\*The fabric of reality, David Deutsch, Penguin Press 1997.

**2018**Intrication CD No-ware (CD-DE)

No. welcomes Canadian France Jobin to the label.

The Montreal based artist will release her 9th album on No.. With her release entitled 'Intrication', she grapples with some truly cosmic concepts involving Quantum Entanglement (go on, Google it..) amongst other truly magical ideas which physics tend to invent these days.

Musically the release can be described as 'microsound ambient' but we think it's much larger than that. It is at once comprised of microscopic sonic particles yet combines that with the warmth we know and love from the 'Ambient' cosmos.

Whilst the sub atomic particles of noise bounce around your mind, the total work weaves a warm blanket of audio enjoyment on both the micro and macroscopic levels revealing a world at once both too tiny to comprehend and too large to grasp. Presented here as No. 916 for your scientific scrutiny.

**2016**Singulum CD LINE (USA)

Quantum physics inspires me to draw a parallel between the fundamental building blocs of physics, sounds and music. I put field recordings through a series of editing and manipulation processes which result in very different sounds from their origins. These manipulations affect time, timbre, harmonics and the essence of each sound, whereas composition influences how they relate to each other.

Singulum represents an unattainable goal, the process of decay while conserving a continuation of information.

**2014**The illusion of infinitesimal CD Baskaru (FR)

«The Illusion of Infinitesimal represents another chance to refine the unique essence of each sound and composition, in an effort to better communicate intent without influencing its unfolding, a delicate balance between perfection and detachment.

A parallel could be drawn from particles of matter, which, "as far as we know, are infinitesimal points of zero size, yet they have measurable amounts of angular momentum. Does the concept of rotation even make sense for a featureless speck? Angular momentum seems to be a more foundational concept than rotation itself. The angular momentum, or spin, of a single particle is restricted in strange ways. It can have only certain values, and not all values are allowed for all particles." (1)

Perfection and uncertainty.»

(1) Collage of quotes from Jim Pivarski, "Spin", Symmetry Magazine, March 2013.



**2014**Quark - How Does The Invisible Sound      DIG      901 Editions (IT)

"Art does not reproduce what is visible, it makes things visible" Paul Klee

Quark: How Does The Invisible Sound? is a media project born with the specific intent of exploring the possible inter-relationship between sound and the invisible, strictly related to science and physics. It relies on monthly digital releases and a MaxMSP custom software called Cconfm, inspired by elementary particles interactions and a physical phenomenon known as Colour Confinement.

The software allows the artists and musicians involved to seek and discover their own vision of the invisible through sound by treating and processing audio files via custom algorithms. Presented as a collection of digital graphic cards and heterogeneous sound art pieces, the research aims to find a deep connection as close as possible to the boundary of knowledge. An attempt at quantum sound in a not-visible yet perceptible world.

**2012**Valence      CD      LINE (US)

"Valence is inspired by both the valence bond (VB) and molecular orbital (MO) theories.

An atomic orbital is a mathematical function that describes the wave-like behavior of either one electron or a pair of electrons in an atom. This function can be used to calculate the probability of finding any electron of an atom in any specific region around the atom's nucleus. The term may also refer to the physical region defined by the function where the electron is likely to be. Often, my compositions start with a feeling or emotional state. There is a likelihood of finding a certain emotion in a piece, but it is not guaranteed, nor do I know exactly when or where I will find it. The act of looking for that emotion in of itself will distort it. Although one would think experimental music grants complete freedom, when composing, I feel constrained by both my mental state and the way in which I build the piece.

I find an unlikely parallel in quantum theory and composing. The electron that can exist on a different orbital plain can never have it's velocity measured or even its exact location known, due to the intimate connection between particles and waves in the wacky world of subatomic dimensions."

**2009**10<sup>-33</sup> cm      DIG      ROOM40 (AUS)

18U's 10-33 cm is a audio work of varied proportion and calculated shape. Based on the ideas associated with String Theory, this latest offering from Canada's France Jobin is a compelling meditation on the nature of sound in time.

"10-33 cm is the theoretical size of the strings that makes up the universe." Jobin explains," Resonance is the vibrational pattern, which determines what kind of particle the string is, and thus the type of particle is the movement of the string and the energy associated with this movement."

With 10-33 cm, Jobin creates a shimmering mirror that reflects on our somewhat limited understanding of these strings as they slip in and out of the dimensions we are aware of. More so, each of the pieces suggest a visionary 'vibration chart', that explores the possible resonances of these theoretic discourses. Through sound, I8U's explorations of String Theory are made almost tactile - a refined bridge between rhetoric and creation.

## Biography

**Markus Heckmann** is a Technical Director with Derivative (<https://derivative.ca>) in Toronto, the makers of TouchDesigner where since 2006 he has been involved in product development, ed support and tool development amongst other things.

Heckmann's inspiration to work with light-based media stems from the abundance of imagery in the club scene of the late 90s and early 2000s. Being exposed to the possibilities of generative and manipulative languages like director lingo, Heckmann started on the path of generative image creation and manipulation which to the day can be found in his professional and artistic works.

Aside from a collection of fake information visualizations, the presented work more and more deals on the intersection of analog / physical objects or spaces and generated graphics or controlled light with a focus on the light and its presence in a volume.

Coming from a VJ background, Markus' personal work has included a/v performances and installations with a range of collaborators that included showings at Mutek Montreal, Mutek Argentina, Day4Night Houston and PRECTXE Seoul amongst others. For his most recent work, France Jobin (<https://www.francejobin.com>) entrusted Markus with the visual component to her performance "Entanglement" which premiered at Mutek Montreal's Edition 22 in August of 2021.

Derivative: <https://derivative.ca>

Markus: <https://project1.net>, <https://www.youtube.com/MarkusHeckmann>

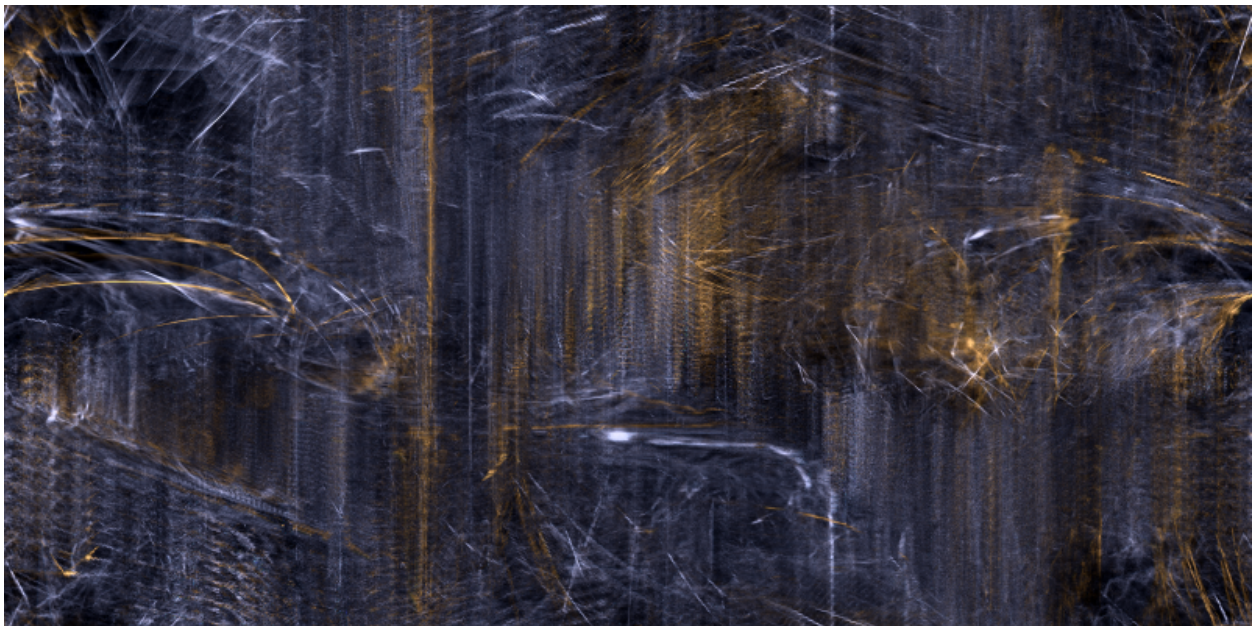
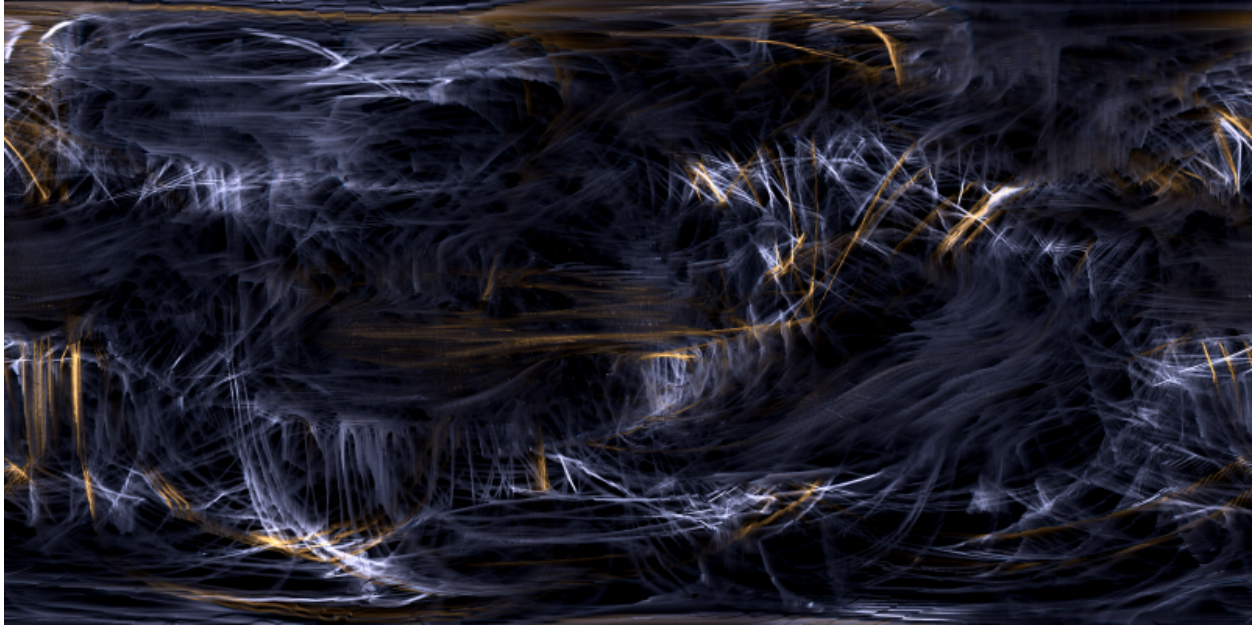


**Markus Heckmann:**

**reclusion II (2021)**

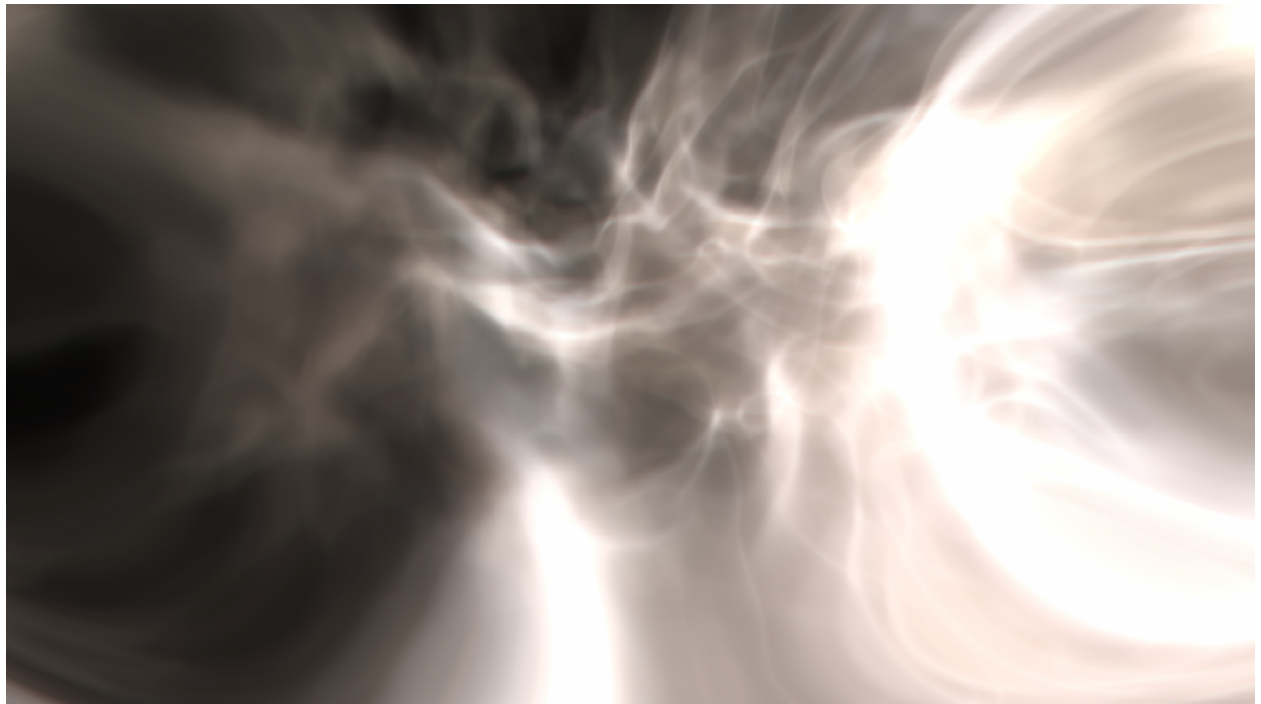
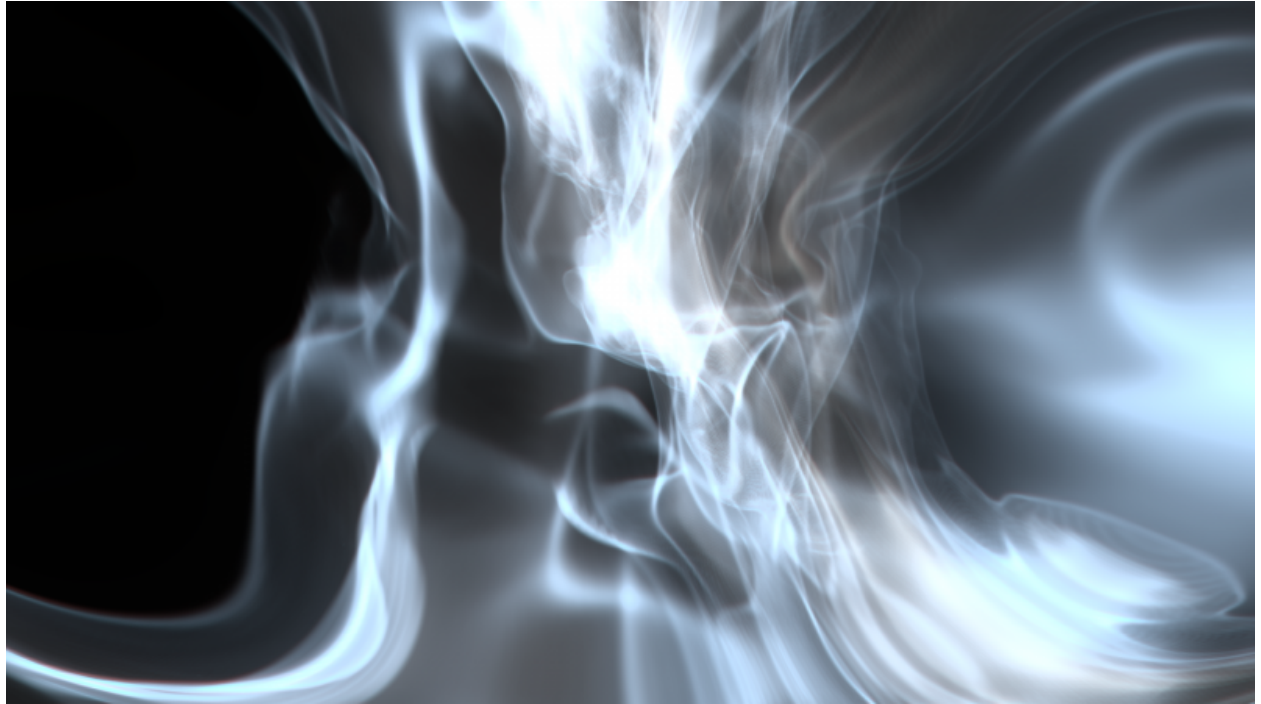
Reclusion is an audio visual collaboration with Toronto based sound artist [Matt Thibideau](#).

[HYBRID - Cutting Edge Canada 2021, Hellerau, Germany](#)

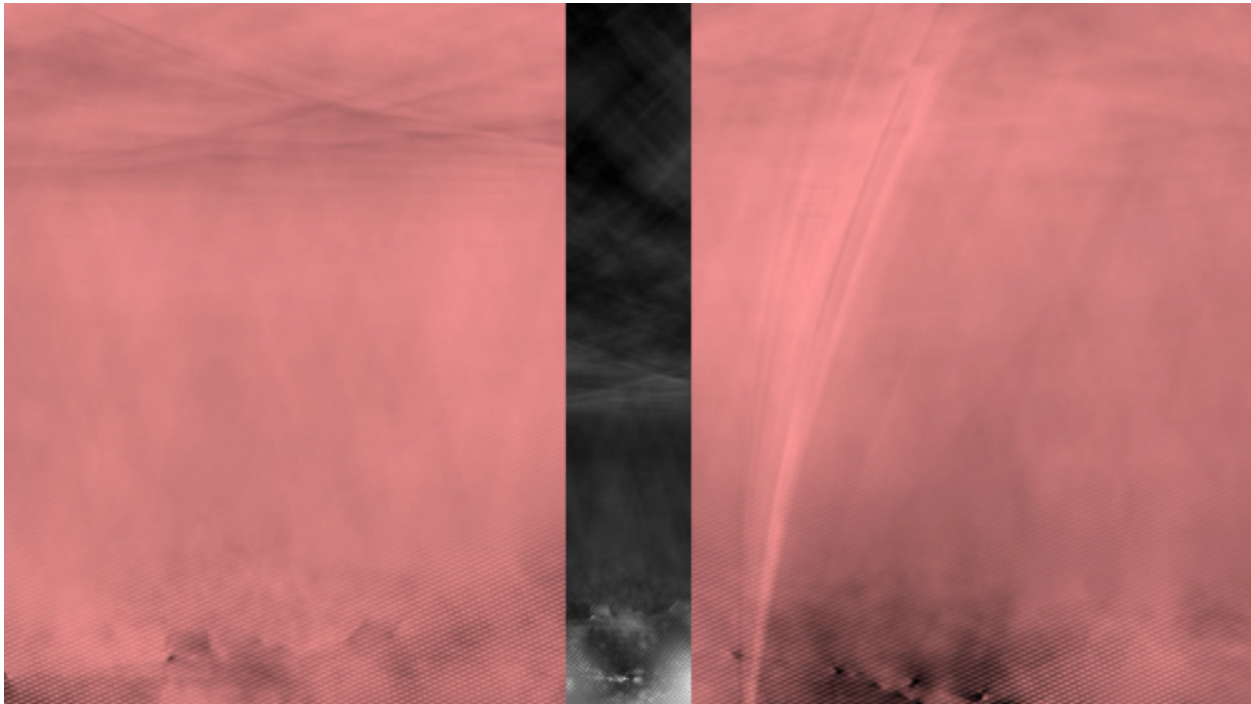


## IVIC

video for "You Cannot See Me From Where I Look At Myself 1" by Saele Valesse from the record [N+001] SAELE VALESE 'IVIC' LP (NOTON)



**harbor darkness (for c&c)** [video](#) for "Harbor Darkness (for C&C)" by Richard Chartier available on [bandcamp](#)





## RECLUSION - 2014

Reclusion is an audio visual collaboration with Toronto based sound artist [Matt Thibideau](#).



Fourth Annual ArtSpin Exhibition 2013, Tower Automotive Building, Toronto, Canada



**Kohärenz (2013)** site specific laser installation in a defunct industrial elevator. The laser projector is placed 4 stories up in the building and emits simple animated patterns towards the viewer. Details of the elevator shaft are illuminated while the exact position of the source remains hidden.

