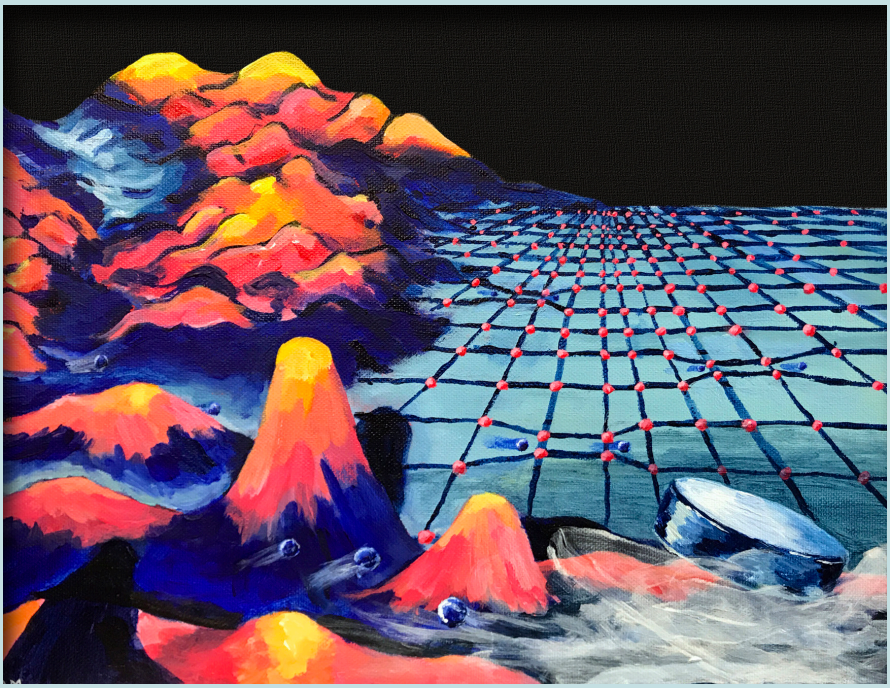
In celebration of the 80th birthday of

TONY LEGGETT



Quantum Landscapes by Danielle Markovich as part of Phys498:ART

A public event featuring

Quantum Voyages

An original performance piece by

Smitha Vishveshwara and Latrelle Bright 7:30pm

Are we quantum computers, or merely clever robots?

A popular talk by **Matthew Fisher** 8:30pm

A reception follows

FRIDAY | MARCH 30, 2018

I Hotel and Conference Center | Illinois Ballroom

QUANTUM VOYAGES

Creative and Scientific Director – **Smitha Vishveshwara**
Performance Director – **Latrelle Bright**
Original Script by **Smitha Vishveshwara** and **Latrelle Bright**

With guest appearances and monologues by physicists
Brian DeMarco • Anthony Leggett • Virginia Lorenz
Nadya Mason • Dale Van Harlingen

CAST

AKASH	Michael Highman
SAPIENZA	Kalan Benbow
TERRA	Gloria Lee
DETECTIVE ERWIN / SCHROEDINGER	Cheryl Sabas
QUANTUM ENSEMBLE	Jon Faw
	Daniel Inafuku
	Tianhe Li
	Cheryl Sabas
	Maddie Terlap
	Yuhui Cassie Zhao
Production Manager	Karmela Padavic
Lighting Design	Heather Raynie
Projection	Tianshu Zhao
Music and Sound	Charles Busse
Costumes	Yuhui Cassie Zhao
Props	Lilla Szini
Web Design	Lark Moreno
Original Artwork	Danielle Markovitch
	Rachel Amaro
Original music	Sandhya Sivakumar
	Charles Busse

SCENES

SCENE 1:	Photons: Wide Awake – What Does it Mean to See?
SCENE 2:	Quantum Conundrums and Superposition; Here AND There – Get a Clue
SCENE 3:	Bose-Einstein Condensation; The State of Friendship
SCENE 4:	Atomic Landscapes; Frenemies
SCENE 5:	Superconductivity; Finding Harmony
SCENE 6:	Exotic Phases of Matter; Lose Yourself
SCENE 7:	MRI; Probing the Brain

D.M.

SYNOPSIS

Guided by Sapienza, the spirit of knowledge, two voyagers enter the microscopic realm of atomic landscapes and quantum conundrums to discover a magnificent and baffling world foreign to every day human experience. As in epic adventures and mythical narratives – say, *Metamorphoses* or *The Nutcracker*—the voyagers explore land after land, each tickling the viewer's imagination and, unlike myths, offering glimpses of a world we believe actually resides around us. The trio confront terrifying prospects of being Dead and Alive at once, encounter electrons acting as waves, are pelleted by photons, glide through diaphanous orbitals of atoms, precess in magnetic resonant imaging machines, levitate above superconducting surfaces, and navigate disordered quantum terrains within complex materials. The two voyagers emerge awakened to the miniscule landscapes within us and to the affirmation that things are never what they seem.

There will be a second performance on Wednesday, April 4, 7:30pm in the auditorium of the Beckman Institute for Advanced Science and Technology, 405 N. Mathews Avenue, Urbana

Are we quantum computers, or merely clever robots?

Matthew P. A. Fisher (UC Santa Barbara)

Designing and building quantum computers in the laboratory is now a billion-dollar enterprise. But might we, ourselves, be quantum computers, rather than just clever quantum engineers? Commonly held belief is that quantum information processing is not possible in the warm, wet brain, because it requires the fulfillment of so many unrealizable conditions. My strategy is one of reverse engineering seeking to identify the biochemical substrate and mechanisms that could host such putative quantum processing. Remarkably, a specific neural qubit and a unique collection of ions, molecules and enzymes can be identified, illuminating an apparently single path towards nuclear-spin quantum processing in the brain.

Biomedical Imaging Center, The Beckman Institute

Biographies

Matthew Fisher is a theoretical physicist determined to bring quantum mechanics down to earth. After earning his PhD in1986 from the University of Illinois at Urbana-Champaign working with Tony Leggett, Matthew was a research staff member at IBM's Watson Research Center. Since 1993, he has been a professor of physics at UC Santa Barbara. Matthew was elected to the National Academy of Sciences in 2012 and was a co-recipient of the 2015 Oliver E. Buckley Prize in Condensed Matter Physics given by the American Physical Society.

Smitha Vishveshwara is a theoretical physicist studying strongly correlated states of quantum matter. After earning her PhD in 2002 from UC Santa Barbara under the guidance of Matthew Fisher, Smitha was a postdoctoral researcher working with Paul Goldbart and Tony Leggett at the University of Illinois, where she has remained as faculty. Recognitions of her work include a Simons Fellowship and the National Science Foundation's CAREER and American Competitiveness and Innovations Awards. In recent years, she has also begun exploring synergies between science and the arts, including envisioning and running a project-based course, *Where the Arts meet Physics*, and creating *Quantum Voyages* in collaboration with Latrelle Bright.

Latrelle Bright is a freelance theatre maker and arts advocate. She has served as founding artistic director of The Renaissance Guild Theatre Company and has worked with Voices of the South in Memphis, the Heifer Theatre Project with Heifer International in Little Rock and INNER VOICES Social Issues Theatre (University of Illinois). She is currently an artist-in-residence at the Urbana Dance Company, curating *Performance Studio: a storytelling playground*. She has received awards for her innovative programming, writing and directing and has been recognized as a Young Leader of Color by TCG. Recent directing credits include *Fun Home*, *The Water Project* and *Sleep Deprivation Chamber*.

HOST: Department of Physics, University of Illinois at Urbana-Champaign

COSPONSORS: Academy for Excellence in Engineering Education • Beckman Institute for Advanced Science and Technology • Biomedical Imaging Center, The Beckman Institute • Center for Advanced Study • Center for Innovation in Teaching & Learning (CITL) • College of Engineering • Institute for Condensed Matter Theory • Krannert Center for the Performing Arts • Office of the Provost • Phys 498 Art—Where Art Meets Physics

SPECIAL THANKS TO THE FOLLOWING INDIVIDUALS:
Janice Benner, Matthias Grosse Perdekamp, Vidya Madhavan, Rebecca McDuffee, Rebecca Wiltfong, and Tracey Wszalek

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