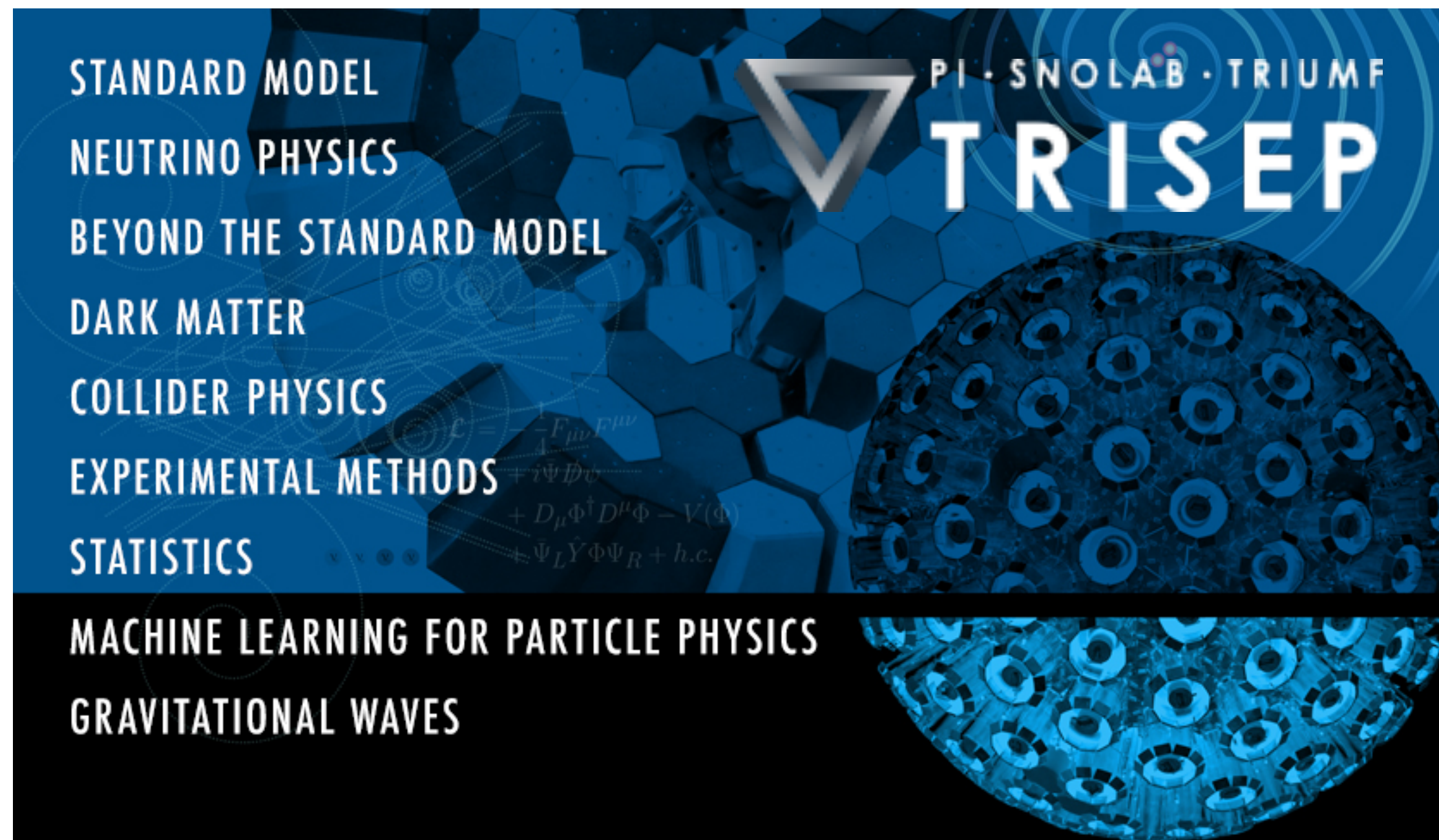


TRISEP 2019

David Morrissey

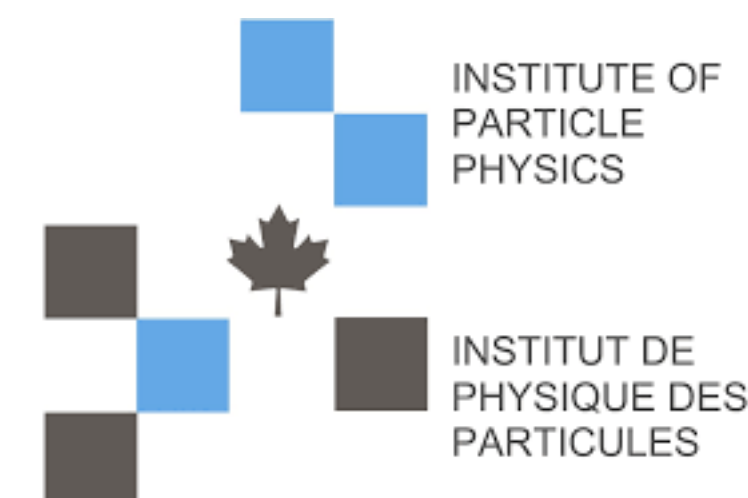
July 22, 2019



STANDARD MODEL
NEUTRINO PHYSICS
BEYOND THE STANDARD MODEL
DARK MATTER
COLLIDER PHYSICS
EXPERIMENTAL METHODS
STATISTICS
MACHINE LEARNING FOR PARTICLE PHYSICS
GRAVITATIONAL WAVES

PI · SNOLAB · TRIUMF
TRISEP

$\mathcal{L} = -\frac{1}{4}F_{\mu\nu}F^{\mu\nu} + \bar{\psi}i\not{D}\psi + D_{\mu}\phi^{\dagger}D^{\mu}\phi - V(\phi) + \bar{\psi}_L Y \phi \psi_R + h.c.$



Discovery,
accelerated

TRISEP Dates

- Lectures at TRIUMF, July 22 - August 2, 2019
- Excursions:
 - July 24, 1-7pm, hike or gondola up Grouse Grind
 - July 31, 1-7pm, sea kayaking in Deep Cove
- Public Lecture:
 - July 22, 7:30pm, Katherine Freese, “The Dark Side of the Universe”
- Banquet:
 - August 1, 7:00pm, Pacific Institute of the Culinary Arts, Granville Island

TRISEP Logistics

- Transportation: #41 bus from UBC Bus Loop to TRIUMF
 - bus schedules and maps at: <https://www.translink.ca/>
- Food:
 - snacks and lunch at the school
 - Monday + Tuesday: order lunch at the cafeteria and put it on the TRISEP tab
 - Wednesday: bagged sandwich lunch to take on bus to excursion
 - Thursday + Friday: catered directly here
 - dinners are up to you - Save-On groceries up the streets, several restaurants, ...

Public Lecture

- Katherine Freese (UT Austin),
“The Dark Side of the Universe”
- Telus World of Science,
7:30pm (doors at 6:45pm)
- front row seats reserved
for TRISEP participants

THE DARK SIDE OF THE UNIVERSE

BY KATHERINE FREESE

The atoms that make up the known universe constitute only 5% of all matter and energy in the cosmos. What remains is a recipe of 25% dark matter and 70% dark energy: nonluminous components whose nature remains a mystery.

Join Dr. Katherine Freese, author of *The Cosmic Cocktail: Three Parts Dark Matter*, and Professor of Physics at the University of Texas, Austin—as she recounts the hunt for dark matter, from the discoveries of scientists such as Fritz Zwicky and Vera Rubin, who identified the first pieces of evidence for dark matter, to the deluge of data today from satellites, underground laboratories, and the Large Hadron Collider.



Dr. Katherine Freese

JULY 22, 2019
Doors open at 6:45PM
Lecture begins at 7:30PM
Q&A to follow

**TELUS
WORLD OF SCIENCE**
1455 Quebec Street
Vancouver, BC

*Presented by the Tri-institute
Summer School on Elementary
Particles (TRISEP)*

Reserve your free tickets:
<https://darksideoftheuniverse.eventbrite.ca>

Getting to Telus World of Science

- Telus World of Science = “Science World”



Getting to Science World

6

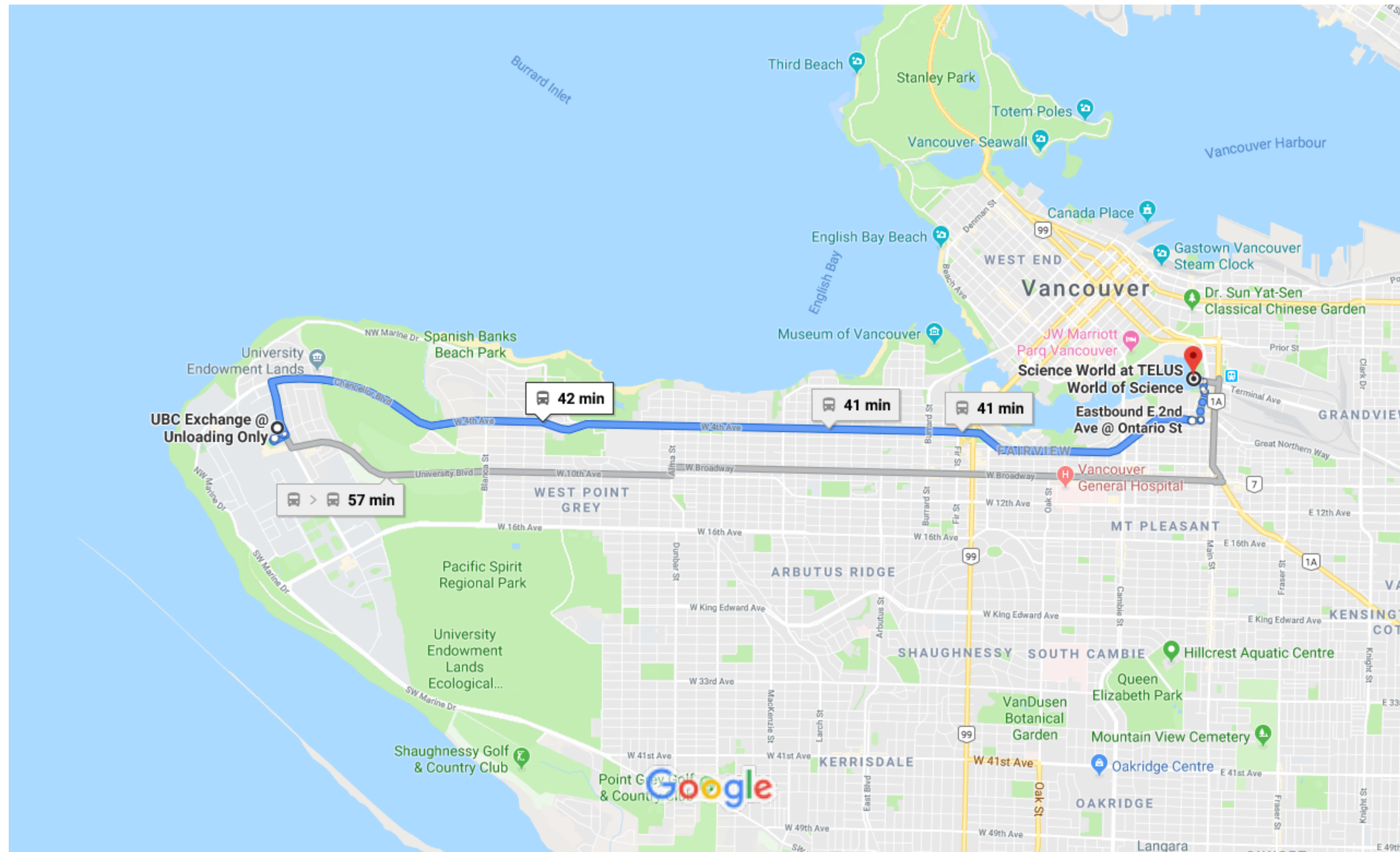
- Science World, 1455 Québec Street, Vancouver BC
- #84 bus from UBC bus loop to Ontario Street
- get off and walk two blocks north to Science World
- walk right in!
- bring your badge for identification
- arrange to go together as a group on the bus?

Getting to Science World

Google Maps

UBC Exchange @ Unloading Only to
Science World at TELUS World of Science

6:04 PM - 6:46 PM (42 min)

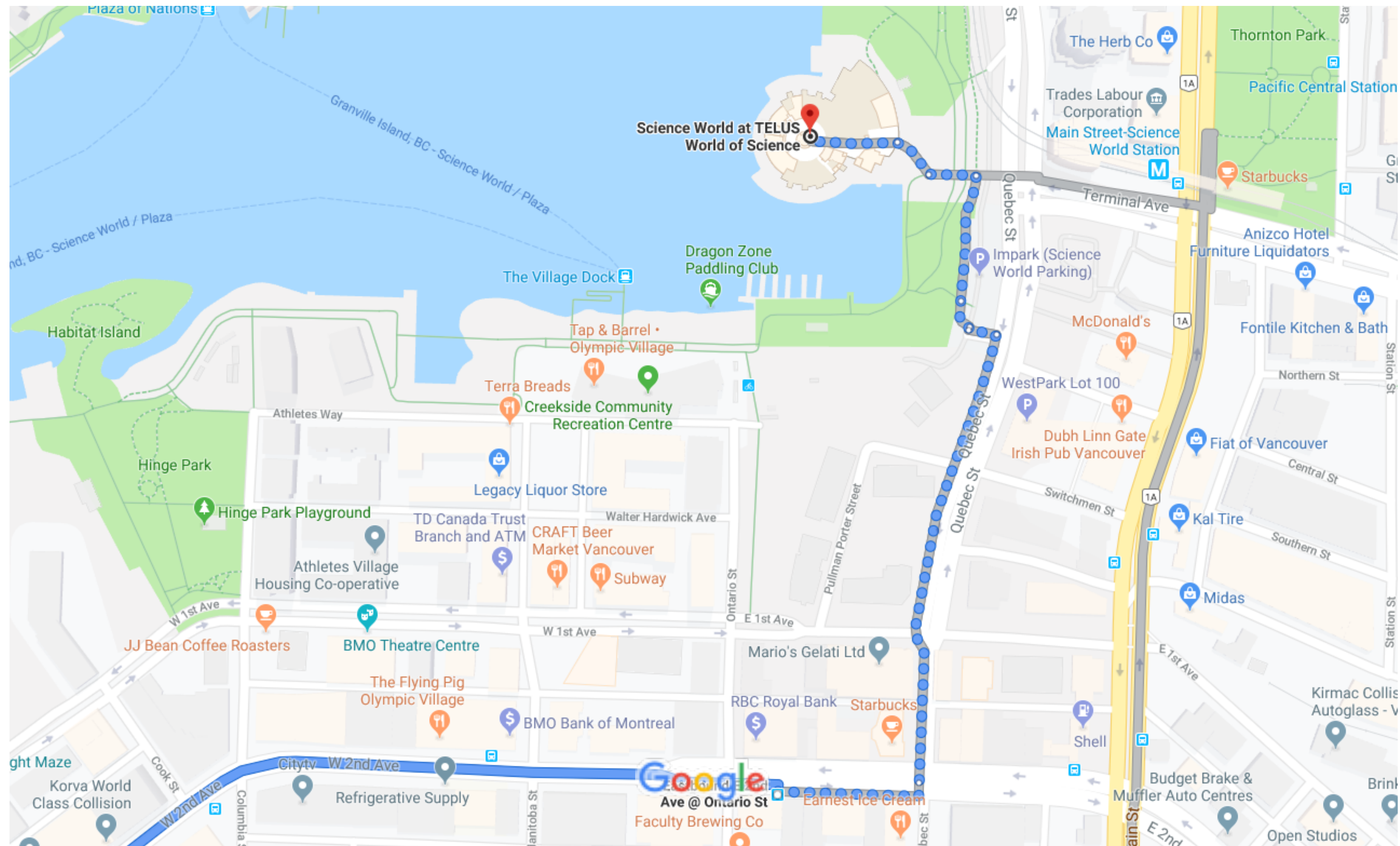


Getting to Science World

Google Maps

UBC Exchange @ Unloading Only to
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6:04 PM - 6:46 PM (42 min)














Map data ©2019 Google 50 m

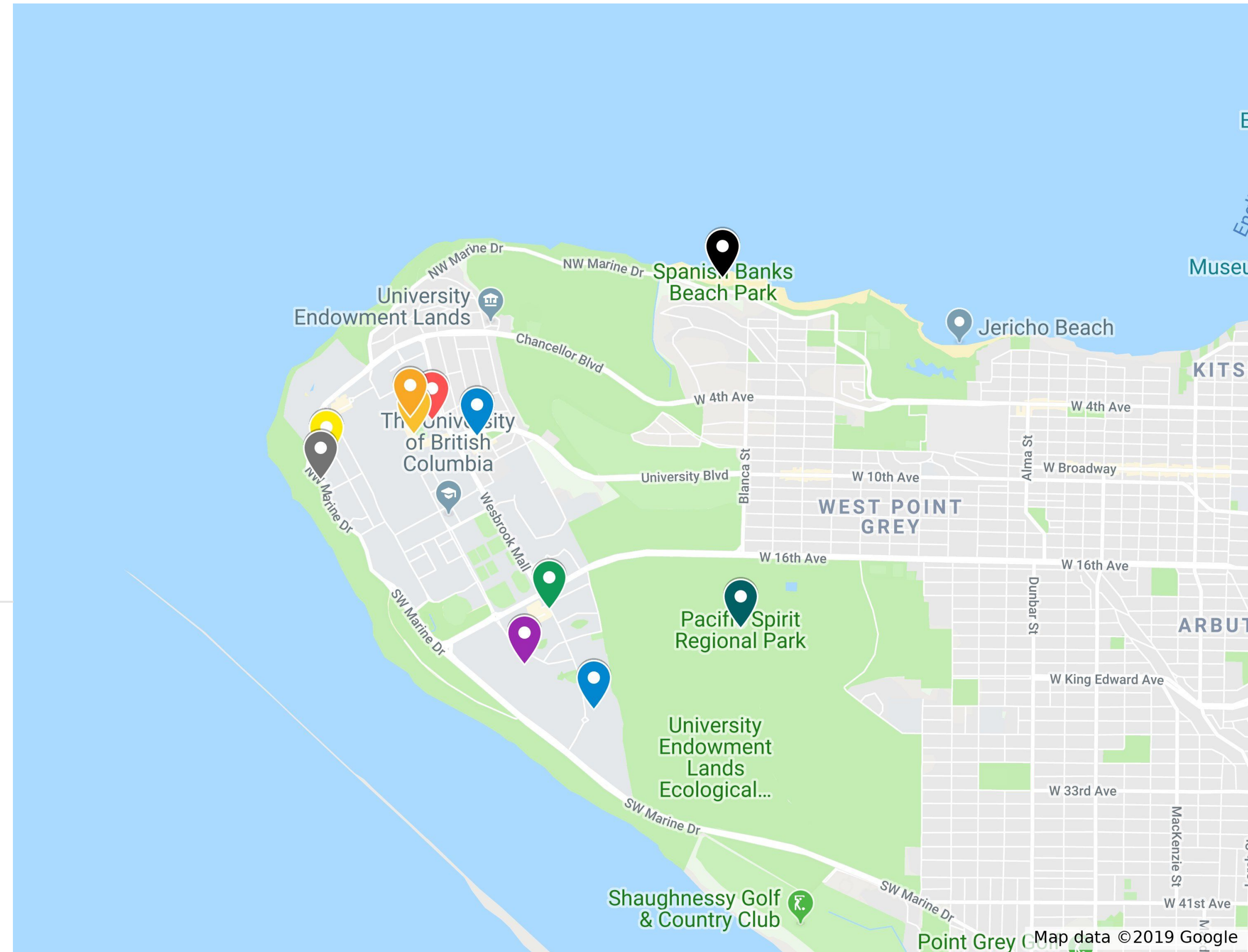
Stuff around TRIUMF/UBC

9

- Wesbrook Village - Save-On Foods grocery store, drug store, restaurants, ...
- food at UBC Student Union Building/Nest by bus loop
- Pacific Spirit Park - forest trails to the east of campus
- Spanish Banks - nice beach due north of campus, follow Marine Drive down
- Wreck Beach - clothing optional beach down the stairs to the west of campus
- UBC farm - very nice farmer's market on Saturday morning
- 99 B-line bus is convenient for going into town

Stuff around TRIUMF/UBC

-  Place Vanier Student Residence
-  TRIUMF
-  Wesbrook Village
-  Pacific Spirit Regional Park
-  UBC Bus Loop
-  UBC Student Nest
-  UBC Life Building
-  Spanish Banks Beach
-  Trail to Wreck Beach
-  University Marketplace
-  UBC Farm Farmers' Market



<https://drive.google.com/open?id=16fy2-vUYG8eyHLgKVm0zjpTK5MYoUXur&usp=sharing>

Weekend Activities

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- Stanley Park: <https://vancouver.ca/parks-recreation-culture/stanley-park.aspx>
- Vancouver Aquarium: <https://www.vanaqua.org/>
- Granville Island: <https://granvilleisland.com/>
- Museum of Anthropology: <https://moa.ubc.ca/>
- Hikes: <https://www.vancouvertrails.com/>
- Fireworks: <https://hondacelebrationoflight.com/>
(July 27 and 31, August 3; over water west of downtown, watch from Kits beach,...)
- Interesting areas: Commercial Drive, Main Street, Kitsilano, Chinatown, Davie Village, ...

Thank you
Merci

www.triumf.ca

Follow us @TRIUMFLab

