

Welcome!



Lattice fermions (in high-energy) so far

- **Nielsen-Ninomiya no-go theorem**

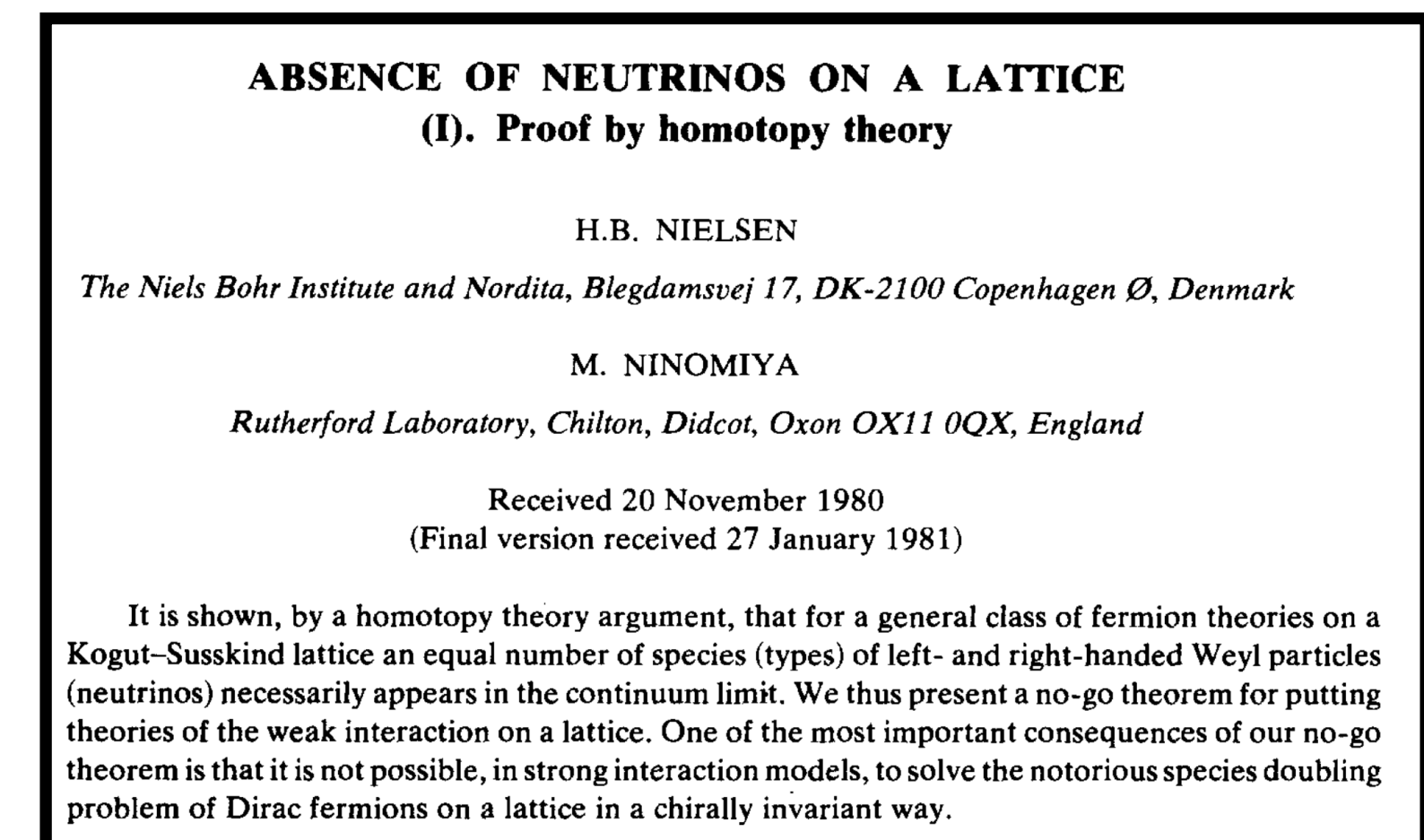
- translational invariance
- chiral symmetry
- hermiticity
- bilinear fermion action
- locality

species doubling appears on the lattice

- How can we formulate lattice fermions that reproduce the desired properties of Chiral/Weyl fermions in the continuum limit?
- How can we couple such “chiral fermions” to dynamical gauge fields and define the full theory non-perturbatively?
- **Wilson fermions can also exhibit lattice-artifact phases**, such as **the Aoki phase**, with spontaneous flavor-parity breaking.



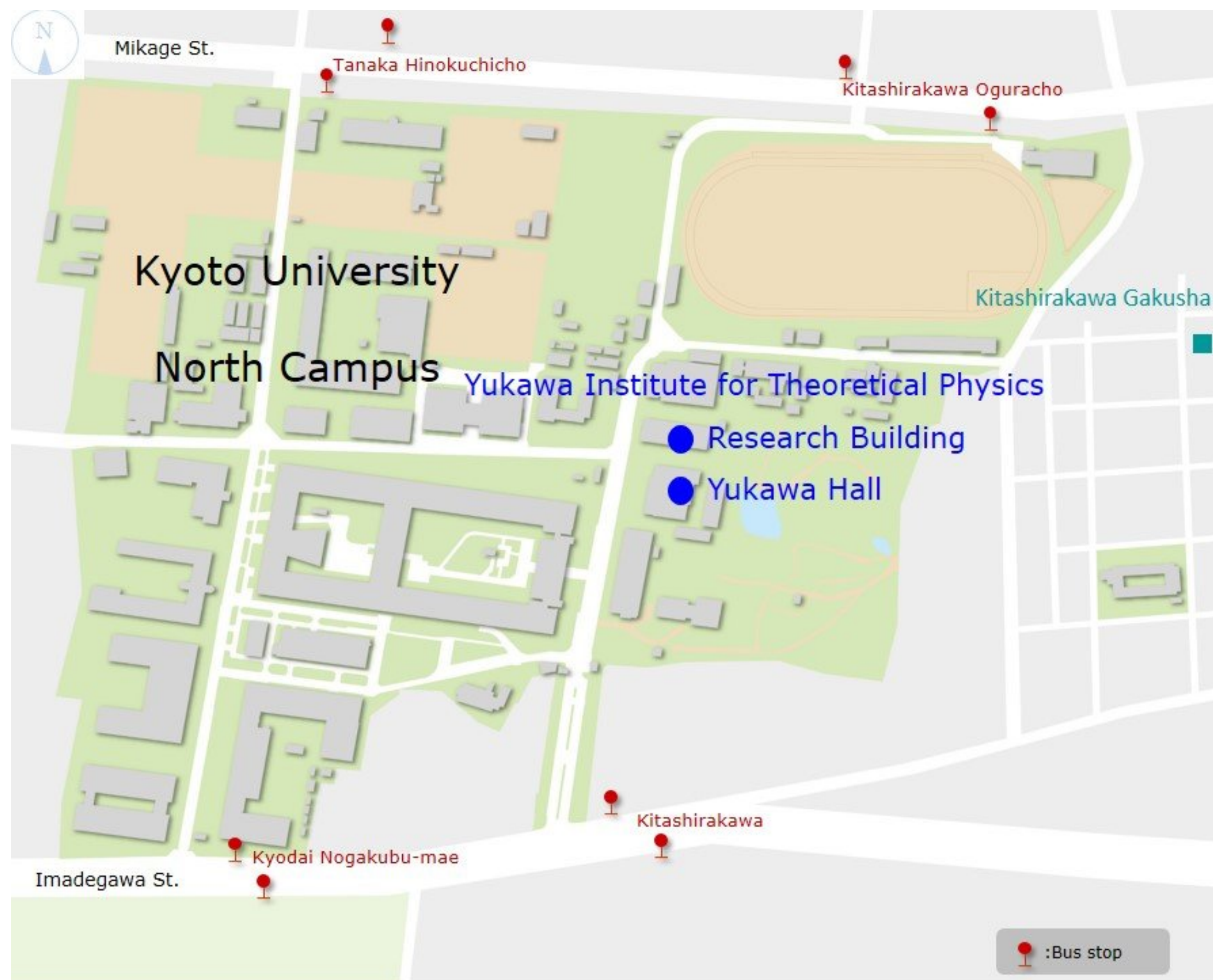
Masao Ninomiya
(photo: 2007)



On this workshop

- Based on
 - lattice (gauge) theories in the Hamiltonian formulation/holography
 - new concept of anomalies/topological invariants/symmetric mass generation
- New formulations of lattice fermions from the perspectives of high-energy physics, condensed matter physics, and mathematics
- **A small request:** since the audience includes researchers from different fields, please define key terminology clearly, especially concepts such as "anomaly"

Conference office (next building)



- YITP has 2 buildings
Yukawa Hall (here) → Room Y...
Research building → Room K...
- **Conference office is K106**
open 9 am - 12 am
1 pm - 4 pm on weekdays
- Secretary: **Ms. Yoko Yazawa**
Please **bring cash**
For refreshments (1,000 YEN)

Other information

- The front door of the building is open from 8am to 6pm.
After 6pm, you can still leave the building by unlocking the door from inside, but you cannot enter from outside.
- Room Y108 (small meeting room) is available if you need a quiet place for an online meeting or a phone call

Upload your talk slide for easier discussions

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Contact

✉ hhiqcd2024@yukawa.ky...

Introduction to Lattice QCD



📅 Oct 16, 2024, 9:00 AM

1st and 2nd weeks (Ha...

Lecture

🕒 1h 30m

📍 Panasonic Auditorium, Yukawa Hall (YITP)

Speaker

👤 Etsuko Ito (YITP, Kyoto Universi...

Description

Lattice QCD is the only known non-perturbative and gauge-invariant regularisation at present. The first-principles calculations of the lattice QCD based on the Monte Carlo methods have revealed various properties of QCD at low energies. In this lecture, the basics of Lattice QCD will be presented. As a final goal, I will discuss how hadron spectra are measured numerically.

Primary author

👤 Etsuko Ito (YITP, Kyoto Universi...

🔗 Presentation materials



There are no materials yet.

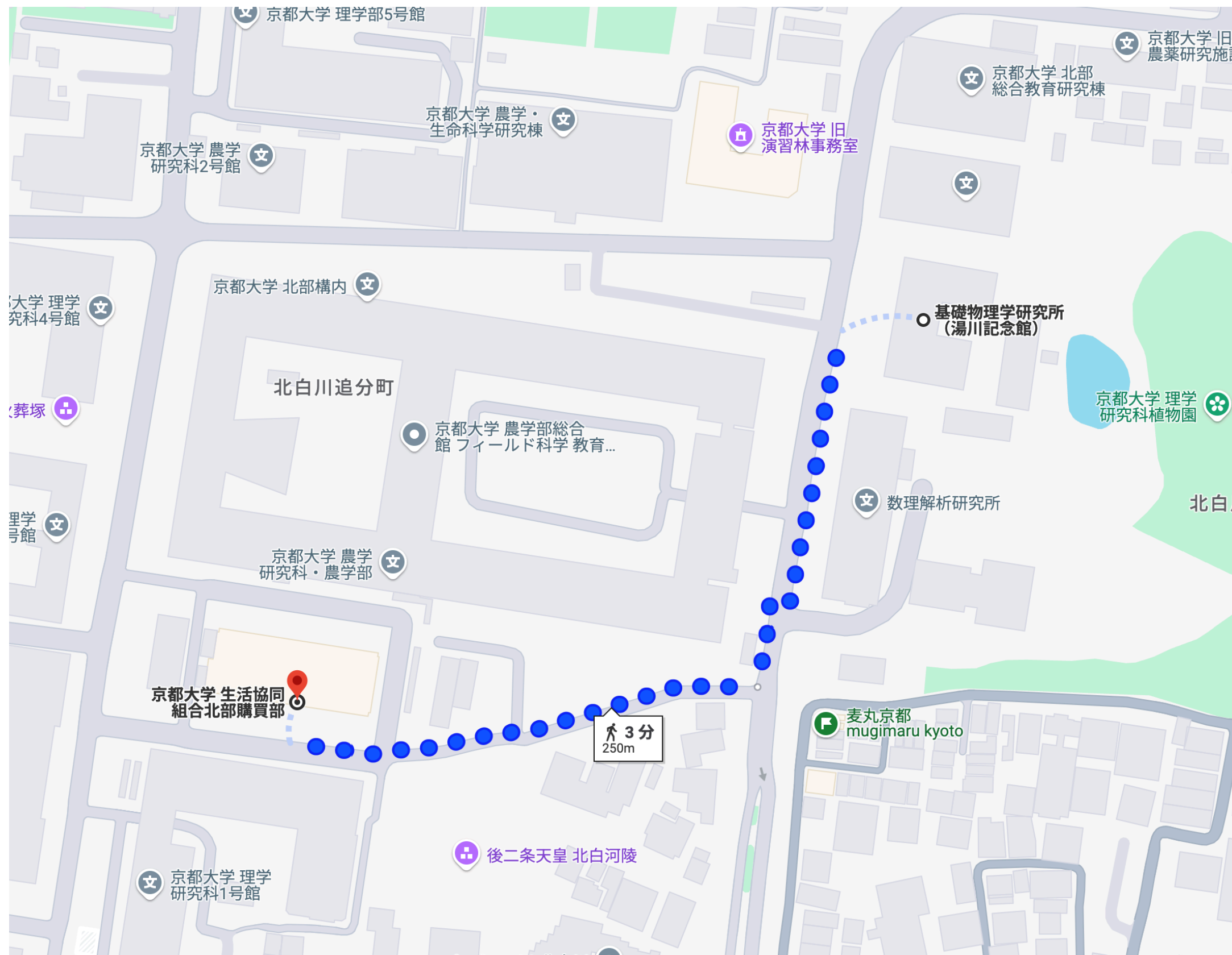
Click here first

From here, we can upload a file
(PDF preferred)

Use your laptop if you give a talk.

Lunch

Lunch



- **University cafeteria** is 3 minutes walking distance (Very busy between 11:30 -12:30)
Cash only
- **Restaurants map** around YITP in or “google”
- Many restaurants around here are quite small, so we **recommend going in groups of 3–4 people.**
- Please note that **vegetarian options** are not always available at restaurants in Japan. We have listed a few recommended vegetarian-friendly restaurants at [the top of the Indico restaurant guide.](#)