KTH Engineering Sciences

Workshop on

Alpha decay as a probe of nuclear structure

September 12-13, 2013, Stockholm

We are pleased to announce a workshop on “Alpha decay as a probe of nuclear structure”. The Workshop will take place at the AlbaNova University center, Stockholm and will be hosted by the nuclear physics group at the Royal Institute of Technology (KTH).

The aim of the workshop is to discuss the various aspects of contemporary nuclear physics relevant for the experimental and theoretical studies of nuclear alpha decay. The advent of radioactive ion beam facilities has opened up new possibilities to investigate the radioactive decays of highly unstable nuclei including the region above ^{100}Sn. Such studies have advanced significantly our understanding of nuclear radioactive decays, including proton decay, alpha decay and heavy cluster decays. Moreover, it turns out that these decay measurements can serve as a unique probe for studying nuclear structure. On the theoretical side, the development in nuclear many-body theories and supercomputing facilities have made it possible to simulate the nuclear clustering and decays from a microscopic and consistent perspective. This workshop will review the status of these structure and decay studies in heavy nuclei, regarding both experimental and theoretical opportunities. The list of main topics we intend to discuss in this workshop includes:

- Microscopic theories of alpha decay, clustering and nuclear pairing correlation
- Progress in our understanding of the structure and decays of heavy unstable nuclei
- New opportunities with radioactive Ion Beams and updating facilities
- Novel modes of radioactive decay

Organizing Committee:

Andrei Andreyev, York
Mark Huyse, Leuven
Roberto Liotta, Stockholm
Chong Qi, Stockholm
Piet Van Duppen, Leuven
Ramon Wyss, Stockholm
Furong Xu, Beijing

Accommodation:

The participants are expected to take care of their own accommodation. There are quite a few hotels within walking distance from the conference venue, typically costing 80-150 Euros/night, as you may see from online booking service like www.booking.com and the list provided by KTH (http://www.physics.kth.se/omoss/kontaktaoss/boende-1.385734). Guest houses are also available at a lower price.

There is no registration fee for the workshop. This cost for lunches, coffee breaks and the dinner will be covered by KTH.

Contact information:

For more information on the workshop, please refer to the workshop website: http://www.nuclear.kth.se/alpha
Please do not hesitate to contact the local organizers if you have any questions concerning your arrival and stay in Stockholm.

Please help circulate this information among your colleagues who may be interested in participation.

We look forward to seeing you in Stockholm!

Location:

The AlbaNova University center locates at the northern end of the KTH main campus, Stockholm (10 minutes walk from the subway station Tekniska Högskolan). The address is
Roslagstullsbacken 21, 114 21 Stockholm, Sverige
Link to google map
https://maps.google.com/maps?q=Roslagstullsbacken+21,+114+21+Stockholm,+Sverige&hl=en&sll=59.353376,18.057833&sspn=0.007328,0.018282&hnear=Roslagstullsbacken+21,+114+21+Stockholm,+Sweden&t=m&z=16

Arlanda is the main airport in Stockholm. To come from Arlanda to Stockholm Central, you can take an air coach (Flygbussarna) to **Stockholm city terminal** or fast train (Arlanda express) to **Stockholm central station**. The fare for a taxi from Arlanda to Stockholm is usually fixed and is around 500 kr (60 Euro).

From Stockholm city terminal and central station you can take the bus #43 (get off at the last stop Ruddammen) or the subway (get off at the station tekniska högskolan (KTH)). The bus stop Ruddammen is just in front of the Albanova Building. It is also possible to change to buses 43 and 44 at the subway station tekniska högskolan.

Stockholm public transport service

http://sl.se/

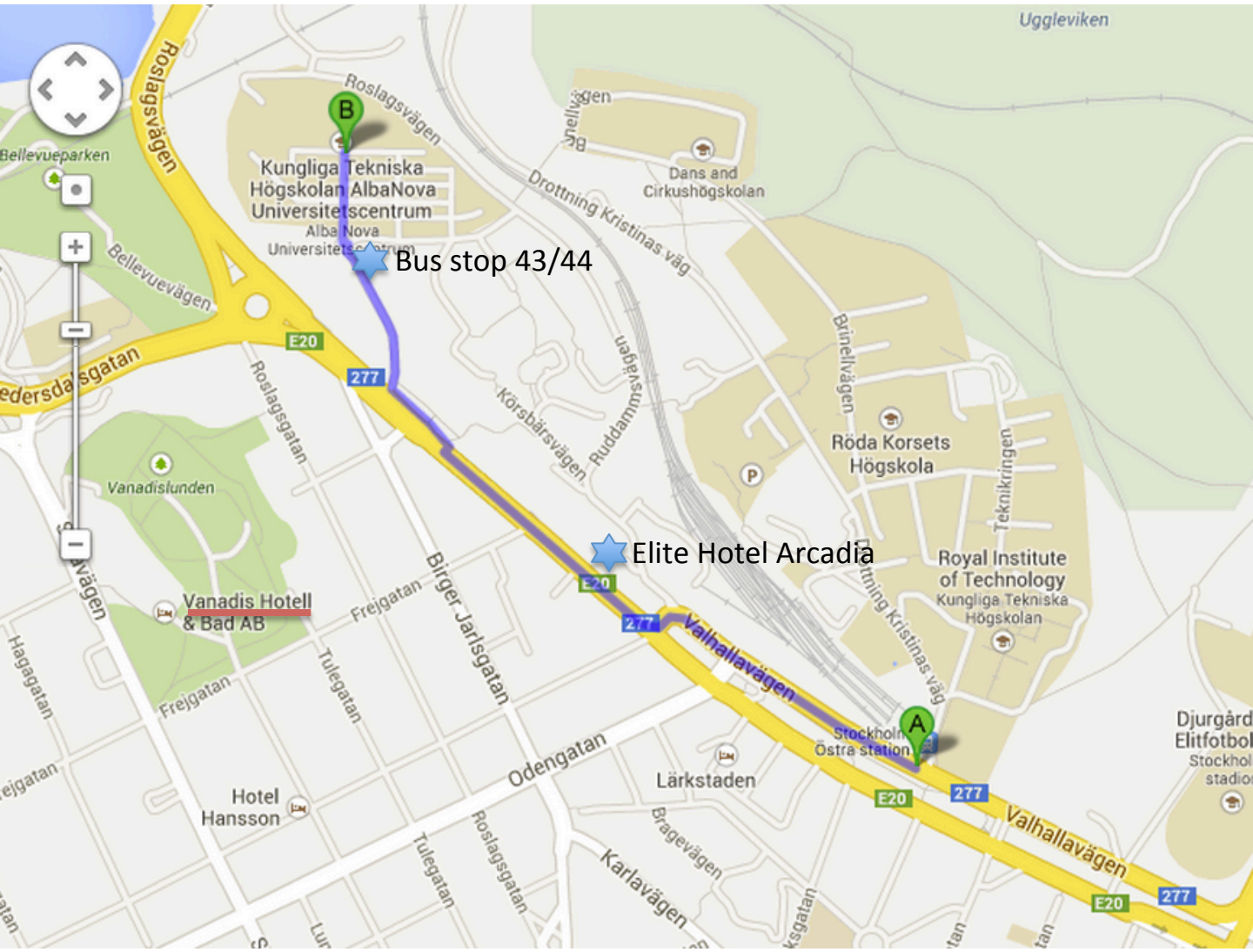
Arlanda Express

https://www.arlandaexpress.se/

Airport coach

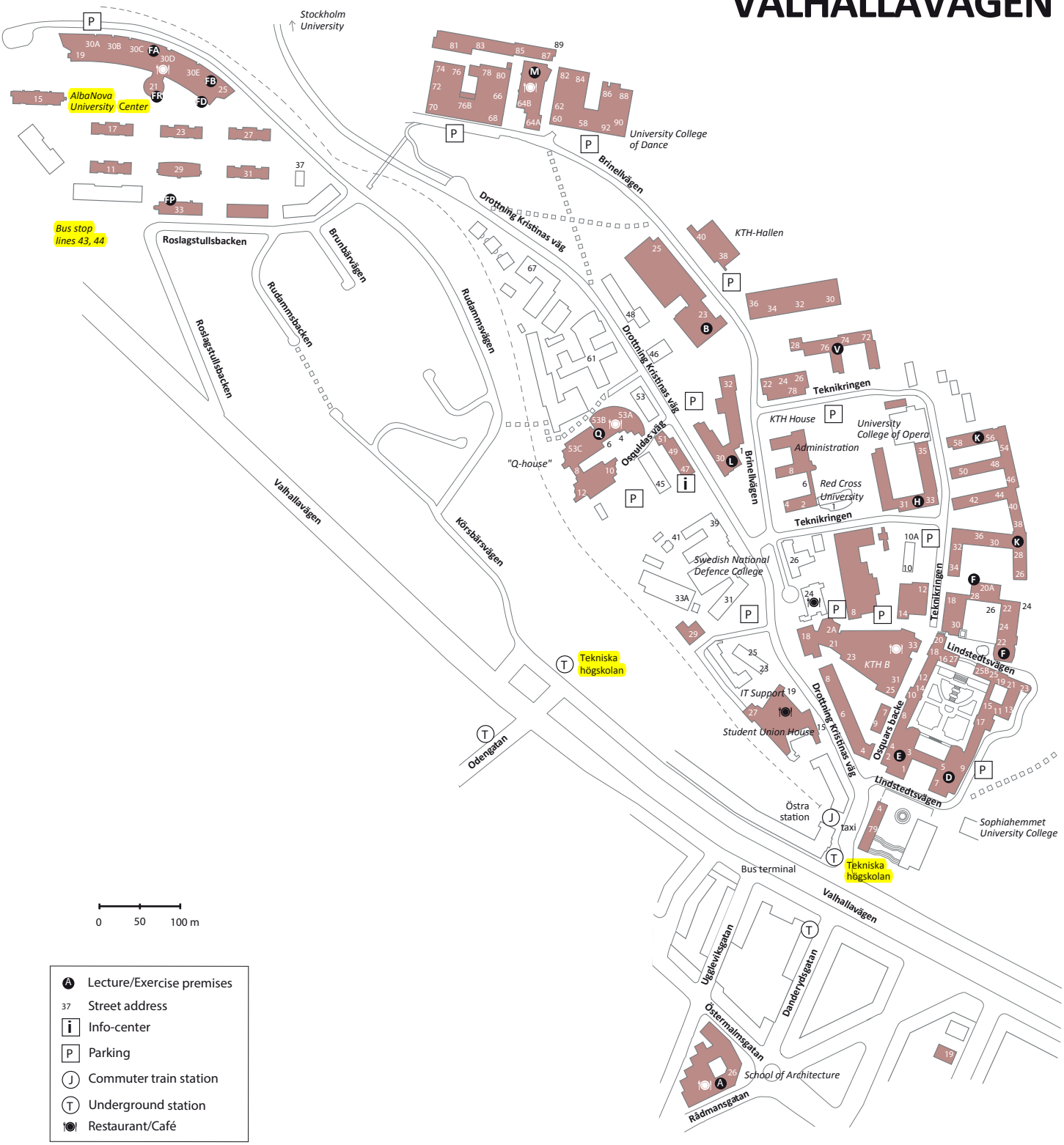
http://www.flygbussarna.se/en

Walking directions from KTH subway station (A)
to AlbaNova University center (B)



Frontview of Albanova

KTH
MAIN CAMPUS
VALHALLAVÄGEN



- Lecture/Exercise premises
- 37 Street address
- Info-center
- Parking
- Commuter train station
- Underground station
- Restaurant/Café

Programme

The workshop will be held in rooms FD5 (12th) and FA32 (13th)

at the AlbaNova University center, KTH

Thursday 12th September 2013

Room FD5

09:45 **Registration including refreshment** (in the reception hall)

10:00-10:15 Bo Cederwall (KTH)

Welcome

10:15 **Session 1** **(Chair:** Andrei Andreyev**)**

10:15-11:05 Kai Zuber (Dresden)

Long living alpha decays and fast isobar separation for nuclear spectroscopy

11:05-11:55 Fritz Peter Hessberger (Darmstadt)

Alpha decay as a probe of the Nuclear Structure of Superheavy Elements

11:55-12:15 Claes Fahlander (Lund)

Spectroscopy of element Z=115 decay chains

12:30 **Lunch break**

13:30 Session 2 (Chair: Claes Fahlander**)**

13:30-14:20 Hans Fynbo (Aarhus)

Beta- and gamma-delayed alpha decay of light nuclei

14:20-15:10 Tzany Kokalova (Birmingham)

Alpha decay states in carbon-12

15:10-16:00 Furong Xu (Peking University)

Configuration-constrained total Routhian surfaces with particle-number-conserved pairing

16:00 Refreshment break

16:20 Session 3 (Chair: Furong Xu**)**

16:20-17:10 Yasuro Funaki (RIKEN)

Gas-like alpha cluster states in light nuclei

17:10-18:00 Carl Wheldon (Birmingham)

Alpha decay widths? Absolutely!

18:00-18:20 G. Bolor (Institute of Physics and Technology of Mongolian)

Nuclear Study in Mongolia

19:00 Conference dinner

Friday 13th September 2013

Room FA32

09:00 Session 5 (Chair: Yasuro Funaki**)**

09:00-09:50 Marek Pfutzner (Warsaw)

Two-proton radioactivity and alpha decay

09:50-10:40 Alain Astier (Orsay)

Alpha-Pb cluster states in 212Po

10:40 Refreshment break

11:00 Session 6 (Chair: Alain Astier**)**

11:00-11:50 Robert Page (Liverpool)

Probing nuclear structure beyond the proton drip line through alpha decays

11:50-12:10 Chong Qi (KTH)

Alpha formation properties in heavy nuclei and pairing correlation

12:10-12:30 Piet Van Duppen (Leuven)

Can we learn something from Geiger Nutall curves crossing in one point?

12:30-12:50 Chong Qi (KTH)

Limitation of the Geiger-Nuttall Law

12:50 Lunch break

14:00 Session 7 (Chair: Piet Van Duppen**)**

14:00-14:30 Junchen Pei (Peking University)

Continuum effects in Weakly-Bound Deformed Nuclei

14:30-15:00 Daniel Ward (Lund)

Alpha particle formation and decay rates from Skyrme-HFB wave functions

15:00-15:30 Basudeb Sahu (Baripada)

A general law for decay of charged particles: proton, alpha and cluster

15:30-16:00 Doru Delion (Bucharest)

Remote presentation via Skype

Systematics of the alpha-decay fine structure

16:00 Refreshment break

16:20 Group discussion Session (Chairs: Mark Huyse & Roberto Liotta**)**

17:20 Finish