OfficeHours_IS5_20160407_Seg01.pdf

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This Office Hours is brought to you for free and open access by the A Longitudinal Study of Language Adaptation at Multiple Timescales in Native- and Non-Native Speakers at Academic Commons. It has been accepted for inclusion in Ethnography Transcription by an authorized administrator of Academic Commons. For more information, please contact mona.ramonetti@stonybrook.edu, hu.wang.2@stonybrook.edu.
Participants: IS5 (glasses), I1 (dark blue shirt)
Setting: I1 helping IS5 prepare for her presentation/meeting with professor by reviewing numerous papers and articles

0:00
xxx I1: you can have a seat?
xxx it’s ok
xxx ((sits down))
xxx IS5: ((sits down))
xxx ((whispers)) (I was hoping I was) going to talk
xxx I1: um:
xxx so today,
xxx we are going to do a <practice>
xxx <for>
xxx um
xxx ((looks up at IS5)) a presentation.
xxx IS5: ((scrunches face)) yea
xxx I1: or a meeting with faculty.
xxx IS5: ((nods)) yes
xxx m—maybe a meeting [with-((opens packet))]
xxx I1: [a meeting with faculty
xxx and you are—,
xxx w-what is the topic that you are going to talk about,
xxx IS5: ([it is] about
xxx uh:
xxx uh:
xxx yea ((turns packet over to I1))
xxx this is but—
xxx I1: ((reads packet))
xxx ↑ high fidelity, (. ) preparation gates,
xxx memory, (. ) and
xxx readout of a trapped-ion quantum bit.
xxx IS5: ((smiles and laughs softly)) yea.
xxx I1: ((nervous)) o:kay,
xxx ((laughs))
xxx so
xxx are you going to: present a ↑summary of this reading?=
xxx IS5: =yes
xxx uh
xxx just (. ) try to show how (it) make the—
xxx how they do the experiments
xxx I think
xxx I1: oh:
xxx ok
xxx IS5: [but I’m not ↑pretty sure (to) he wants me to talk—
xxx to say.
xxx I1: is this,
xxx  uh:
xxx  a project for (. ) a [class?
xxx  IS5:   [this is a-
xxx  class yes.
xxx  I1:   oh:
xxx  ok↓
xxx  wha-which class is [this?
xxx  IS5:  [It’s a seminar
xxx  like
xxx  uh: (.1)
xxx  the class name is seminar.
xxx  I1:  seminar
xxx  IS5:  yea ((nods))
xxx  I1:  ok
xxx  and
xxx  wow
xxx  first on (.2) on this page
xxx  ((shows packet to camera))
xxx  [there’s a (. ) ↑awesome (. ) diagram
xxx  IS5:  [uh-huh
xxx  ((laughs))
xxx  I1:  that I don’t know how to interpret
xxx  IS5:  ((laughs))
xxx  I-=
xxx  I1:  =so
xxx  well↑
xxx  I am not your [professor
xxx  IS5:  [uh-huh
xxx  I1:  so I will not know all the terminologies=
xxx  IS5:  =mhm
xxx  I1:  is it possible↑ for you to explain this
xxx  in a very
xxx  um
xxx  unprofessional way-
xxx  ↑not- uh
xxx  like in a very:=
xxx  IS5:  =I mean currently=
xxx  I1:  =yea
xxx  IS5:  I don’t understand this ((points to page)) procedure
xxx  very well↓
xxx  so I have to ask him like (what this)
xxx  (but what they want to do) is just try to uh use the
xxx  calcium atom,
EXC to uh
EXC t-to trap the ((incomprehensible)) quantum (cubit)-
EXC quantum bit
xxx  so this is how we make it,
xxx  how we do the preparation
xxx  and how they-=
so
transform the quantum state and how they
measure
quantum (.) bit
[state
yea
what is a quantum [(.) bit?
ok
uh
(quantums are),
you know
bit
for uh:
classic
like
for a computer,
[a bit is ((incomprehensible))
[yes
[right
quantum bit the same thing
just we use uh
um: (.1)
just a for quantum (they will like)
we use the spin of (.) electron,
which is up and down so
it’s (semi) but-
uh:
the ↑difference of quantum (bit and bit) is that
quantum bit you can think it is a continuous
like
uh but
EXC uh
(EXC (for the- from-from the) fundamental
EXC u:m
assumption or (postulation of the quantum bit)
▲we ▲((incomprehensible))
(it would uh become one state or another
state)
so
there just a two state for you (to matter)
which is similar with zero [and one yea ((trails off))
3:00
but use
you use different (.) numbers?
[no no
[you record it state one and state two?
yes
it just like uh: if you know the spin
you will know (that) electron has:
mhm
spin,
which is half,
so you will have the (positive) component and
[mhm
(negative) component
[so
like if its spin is up,
so you can treat it as (though it was) ↑zero in the:
(classic orbit)=
[=mhm
and (it its spin down) so you treat it as one (.)
yea
so
trapped↑ ion,=
=trapped ion is- is- is a
is a
a kind of
uh: (implement)
like
you use- you use a
(it is) how they make- how they prepare the (.)
quantum bit=
[=quantum bit [p]
so
the experimenters (. are creating quantum bits,
or they are just observing quantum bit,
or they are=
[=they uh:
how to say°=
=what are they doing↓
because they
because uh
↑first you can see quantum bit is a mathematical
uh
objects,
[=right=
[(but) we want to- but ↑actually it is a physical
things=
[=uh-huh?==we want to
uh: (.)
make p-
↑we can’t say we create it because
like
the spin- the ↑spin is there↓=
xxx IS5:  =but we want to ↑make it
xxx       uh: (.1)
xxx       as what we want
xxx       to make it become (.) the thing we want
xxx       to make it- to make it transform like (. ) what we desire.=
xxx I1:  =what is the thing that you desire
xxx     what do you want?
xxx IS5:  like
xxx I1:  it to be (.1)
xxx IS5:  ((leans forward)) huh?=
xxx I1:  =what do you want the quantum bits to (. ) [look like
xxx IS5:  [(we want)
xxx I1:  or what do you want=
EXC IS5:  =uh: as I said
EXA  ((stammers)) two level things
xxx up and down
xxx I1: up and down
xxx IS5:  yea
xxx I1:  [oh ok
XXX IS5:  [or um:,
xxx well of course we use for l-l-lots of ((??))
xxx like
xxx like trapped ion is one way
xxx we also can use the (photon)
xxx because the (polarizing-)
xxx we can use the polarization photon [as (a quantum bit
xxx too)
xxx I1:  
Xxx IS5:  (but ↑there are) some practical: (. ) factors which can uh
xxx constrain our- our choice of [(.) (quantum bit)
xxx I1:  [oh ok]
xxx IS5:  so=
xxx I1: =so this is,
xxx you said
xxx is a experimental study?
xxx IS5:  ((nods)) yes.
xxx I1:  so ↑how did (they) design (. ) the experiment
xxx what are the (. ) individual (. ) variable
xxx dependent
xxx dependent variable↑
xxx IS5:  yea
xxx this,
EXC like
EXC this uh: ((??))
EXC this is there apparatus
xxx I- I think=
xxx I1:  =ok,=
xxx IS5:  =yea
EXC but uh
I'm not very um:

I don't know-

(well)

like,

[ok]

((unclear)) ((pointing at page)) I just know (which is) trapped ion but I still have no idea how they

uh

do it in (.) practically=

= so is this the first paper that you read about trapped [ion and quantum bit?

[yes ((incomprehensible))]

[(((incomprehensible)))(overlapping speech with IS5))]

(I'm just reading) some uh

basic concept

which can (let me know what to)- because I- I still

uh

I didn't know (what is) trapped ion either,

before I read this- this paper so=

[ok=]

= so ↑now I just reading some (great) fundamental concepts >[so that I can understand (these things)<

[mm]

but as for uh how they (. ) do the experiment

I have to talk with professor

[ok=]

[yup↑]

[what is your result

good result?]

or bad result↓

good

[good result

[good- g- this said

mm:

they- uh: they claim that they get high fidelity,

compared with the ((incomprehensible))

what does that mean

high fidelity ((laughs))

high fidelity ↑((raises hand to chin and thinks))

uh: ((pushes up glasses))

fidelity↑ is something like um

when you have some uh input

[mm]

and you get the output,

and you will compare them,

[mm]

[to see the:
if they are (.). same
ok
yea
I think (((incomprehensible)))
[whether the (.).
input and output are identical or not?
I don’t know if-
- it shouldn’t↑
it should ↑not be identical
it just (.). compared with what you- (.)
((hand gestures))
(.1) because there will be some transformation↓
uh in the: [([??])]
during the process
[yea
[yea
so
uh: (what is) high fidelity means?
I (.). don’t know (it) very well,
m(hm ((leans in))
[but
(.2) hhh (.)
so you know the
the meaning of this (.). ↓word
mm: (.2)
not really= ((laughs))
=I mean:
((incomprehensible))
((turns to laptop and begins typing and mumbles))
but because
uh
((continues typing from 7:17-7:35 while mumbling))
((lifts laptop and shows I1))
((reads page)) ok
yea I know the:
↑social meaning uh the) ((mummering))°
↑oh: cool
but- but- it pr- I mean ((stammers))
(real really um impractical↓)=
=mhm
((incomprehensible))
uh
((opens packet)) this paper ((incomprehensible)),
mhm
(8:00-8:08 incomprehensible))
the definition of fidelity is that
um (.1)
the overlap of the quantum state
so
>(incomprehensible)< we have different definition
but we just use the same name
so
actually
I’m not-
I don’t know like what to=

I1: =very ↑interesting argument

title (varies) gates, memory,
yea
preparation gates memory and [readouts

I1: [and readouts

I5: it’s the-

I1: [(looks like something that’s(.))

I5: [it’s the pr- operation=

I1: =like a machine↑ or something

I5: yea

preparation is ((??)) as an input

I1: [oh:

I5: [and the gates is like

u:m

like transformation

I1: [uh-huh

I5: uh for: (the) classical things

we

I1: if you- you input zero,

and you want to get one

I1: [right

I5: [you use (not) gate

right=

I1: =yes

I5: so

same here

we have quantum gate here (.1) yea

I1: mhm

I5: and memory,

memory

9:00

((grabs paper)) here’s the sample
I still- I haven’t read this paper

I1: (.1)[wow

I5: [but

I1: so many papers ((laughs))

I5: ↑a:nd

the readout is (outputting) what [you (think)

I1: [ah: ok]
xxx yea
xxx huh?
xxx ↑(so in- in terms of (.)) like
xxx machine↑ processing
xxx (I ↑think I ↑get [it
xxx IS5: ] because uh:↑
xxx this is what we want to do to make
xxx uh
xxx so the- s- so the (.1)
xxx big picture of all the
xxx all the ultimate [goal is to make quantum computer
xxx I1: ] [uhuh
xxx oh:
xxx cool
xxx what is go-
xxx w-what is the advantage of a quantum computer↓
xxx like what [can we
xxx IS5: ] [fast
xxx I1: fast
xxx IS5: and
xxx uh:
xxx ((leans towards computer))
xxx (I ↑noticed that) ((incomprehensible)) (English name
xxx I can find it) ((begins typing))
xxx I1: ok,
xxx ((IS5 typing))
xxx IS5: yea
xxx the: (computation)
xxx the
xxx I1: ((leans forward to see screen)) oh:↑↓
xxx ok
xxx IS5: this one°
xxx yea°
xxx I1: (the importation)?
xxx IS5: yea
xxx ((mumbles))°
xxx I1: so it’s more secure
xxx IS5: ((nods)) yea°
xxx I1: more secure and more fast
xxx IS5: (yea but)
xxx it’s so hard to make it.
xxx I1: why?
xxx what was the problem (. ) of making it
xxx IS5: first we cannot make
xxx EXC ((stammers))
xxx EXC we can’t-,
xxx we are trying to know truth of good quantum bit
xxx I1: mhm
xxx IS5: (candidates right)
and it’s hard to (.). make it (elastic)

to get stable (and) last it for [a long time

I1: [ok

IS5: so (.). yea

I1: (.2) [hhh

I1: [it’s still in the (.). very very-

I1: I° I think it’s in the very beginning=

I1: =uh-huh

the beginning stage

I1: so it won’t be ready in (.1)

before 2020

IS5: 2020?

IS5: +you mean two-oh-two-oh?

I1: two-oh-two-oh=

IS5: =of course

it’s impossible

yea

((incomprehensible)) I think 100 years

I1: oh [really↓

IS5: I think so

because

I1: [why↑!

IS5: [we have so much tech- technical problems and

I1: what is the technical problem (that we face)?

IS5: like- like first

we still

w-we still don’t

w-we are still talking about how to (.). uh

talking about the- the ((incomprehensible))

((pointing at page)) because this is the way we

trying to

I1: mhm

I1: implement (.). [((incomprehensible))

I1: [so ↑for this experiment↓

we can get good candidates of quantum bit?

IS5: mhm

((looks at I1 waiting for her to continue)) what-

I1: [is that what this means?

IS5: u- yea

I just say it’s like (.). [w-

I1: [so if something is higher fidelity

if the quantum bit has very high fidelity,

does that mean that ((incomprehensible))

IS5: [it’s-

for ↑that it is uh:::

one factor that we uh: we evaluate

I1: ok

I1: the candidate
but there are some other (.)

ah

factors of, ((mumbles, in comprehensible))

((mumbles and thinks))

huh

I can’t remember

((leans forward to look at paper))

but yea

can’t remember

this is just one example there are a lot of

other practical (.) considerations

mhm

[ok

[ok

and ion trap is- trapping-

trapped ion is just one way to [f:igure out

it’s just uh: one implement=

cool

(((incomprehensible)) (you can use three or four times)

what is the measurement?=:

what do you mean?=:

=of doing this ((looks through paper))

12:00

never mind

I’m just asking very general (.) scientific terms

((laughs))

I still don’t know this one very well.

oh! can I ask you a question,

what do people:

what ((software do people use in physics world when

they are trying to make graphs of this°

you mean to make plots?

((nods)) mhm

uh:

we use different softwares I think if you=-

=you don’t use excel

time right?

uh:

[sometimes

[some- sometimes we use excel

uhuh

but-

but like for high-

for high-

for high energy experiments we use

((incomprehensible)) which is the (.)

different masses framework of designed by CERN=}
xxx I1: =wow
xxx IS5: [you know CERN?
xxx the ((incomprehensible))
xxx the institute in Europe
xxx (C-E-R)
xxx >ok you don’t know it’s ok<
xxx I1: ((smiles sheepishly and laughs))
xxx IS5: but for:
xxx I don’t know what they use for ((incomprehensible))
xxx this is too new for me
xxx I1: do we have those kind of softwares in Stony Brook?
xxx are they free software,
xxx or they are you have to buy them
xxx IS5: um
xxx for ↑((incomprehensible))
xxx it is
xxx I1: I ↑think it’s free=
xxx IS5: =it’s free
xxx so everybody can have access to it. ((nods))
xxx I1: yes but
xxx but I mean-
xxx people never (.) use (root) out of um
xxx outside of the kind of experiments
xxx I1: oh: ok
xxx IS5: [because they have like
xxx I1: [so it’s very spe↑cific
xxx IS5: yea
xxx I1: just for this
xxx IS5: yea
xxx I1: few ((nods))
xxx [cool
xxx IS5: [there’s no need to use it
xxx like
xxx it’s complicated and you will
xxx you will have to know (it is and uh:)
xxx how to make program
xxx I1: mm:
xxx IS5: so:
xxx but you know
xxx uh in daily life
xxx excel or (origin) are enough
xxx I1: ((nods and laughs))
xxx IS5: don’t need to use root
xxx I1: powerpoint (enough)
xxx ((leans towards paper))
xxx cool!
xxx so what other questions are you going to ask your
xxx professor tomorrow
xxx IS5: mm:
too many questions I-
((laughs))
yea° ((laughing))
first is what do we- what we are trying to talk,
[ok
[and: uh
like uh
I want
I have to ask about the (apparatus),
[how they do the experiments,
[mhm
[yeah and there are some (.1)
that is a two way: problem question I’m gonna (.) ↑ask
((nods and twiddles thumbs))
ok.
do you bring a handout?
when you meet with your professor=?
=yeah.
ok

do you have the (outline) yet?
((whispers)) I plan to make it°
((laughs))
good luck then
yea because,
(yea
I’m
but I
I still don’t know how they do it like
uh in ↑this part (.)
this one they have a: introduction of the:
the trapped ion
what (a) trapped ion is
((slowly grabs paper))
((unclear)) computers
physical realization
uh here:
oh sorry this is not- ((flips pages))
oh in this one
we have the- but ↑this is a book
(this is a one [chapter book)
[it is that?
[ah no
that’s just a quote
I thought that was the author
this
(the) ↑author is... is (.2) ((incomprehensible))
but ((incomprehensible))
15:00
this is a one to- ↑topic↓ or one chapter of the (. ) book
((flips through paper))
((reading from paper)) conditions for quantum computation,
(square), ((incomprehensible)) ((seems confused))
[you can read it
(it’s quantum bit)
((laughs))
((continues reading)) separation of ((attempts to read))
((incomprehensible))
yea
this is the like
the preparation
↑oh:
the ↑input
yes the input
((continues skimming paper))
cool↑
measurement of output=
=((incomprehensible))
((nods head))
((reading paper)) (harmonic)
uh:::
yea
this is[:
[oscillator
I ↑know oscillator
it means ((draws wave with finger in air)) regular wave forms↑
yea
like
if you- if you have a
a spring?
yea
ah: ok
cool
((continues reading and laughs))
formulas
((laughs and continues to read paper))
((laughs))