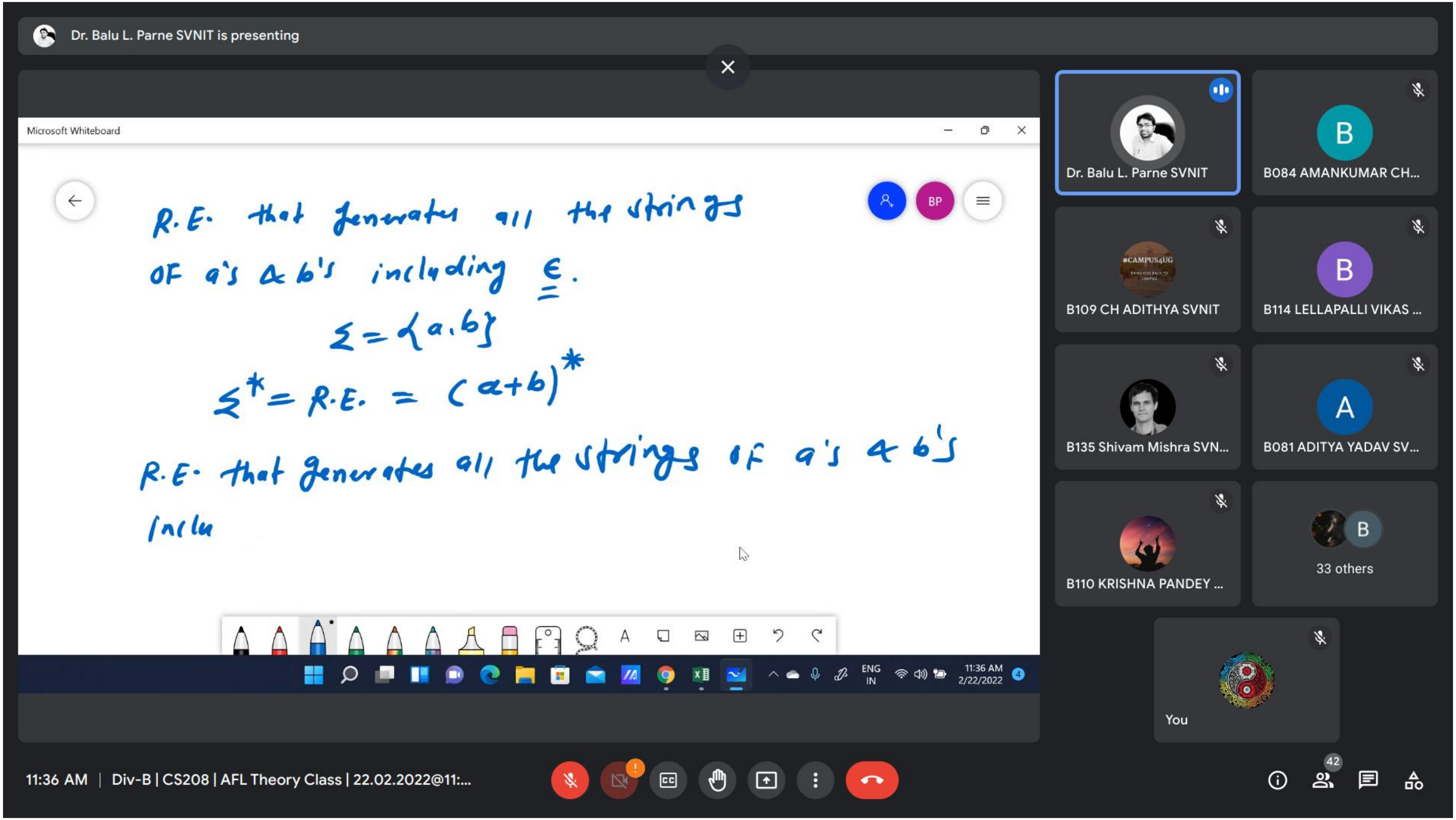
Dr. Balu L. Parne SVNIT is presenting
Microsoft Whiteboard
R.E. that generates all the strings
of a's & b's including ε.
$\Sigma = \{a, b\}$
$\Sigma^* = R.E. = (a+b)^*$
R.E. that generates all the strings of a's & b's
inclu
Dr. Balu L. Parne SVNIT
B084 AMANKUMAR CH...
B109 CH ADITHYA SVNIT
B114 LELLAPALLI VIKAS ...
B135 Shivam Mishra SVN...
B081 ADITYA YADAV SV...
B110 KRISHNA PANDEY ...
33 others
You
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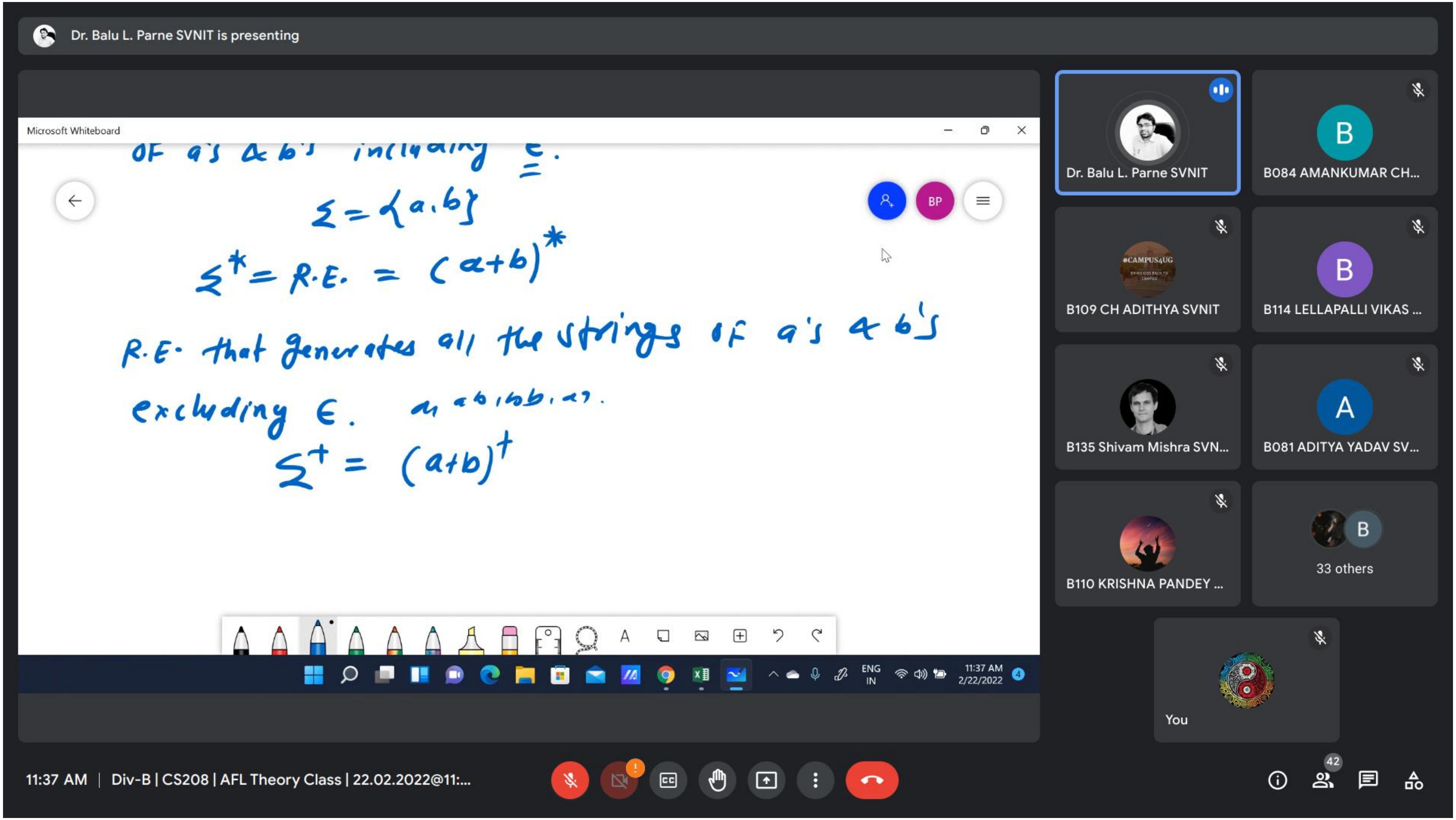
Dr. Balu L. Parne SVNIT is presenting
Microsoft Whiteboard
Σ = {a, b}
Σ* = R.E. = (a+b)*
R.E. that generates all the strings of a's & b's
excluding ε.
Σ+ = (a+b)+
Dr. Balu L. Parne SVNIT
B084 AMANKUMAR CH...
B109 CH ADITHYA SVNIT
B114 LELLAPALLI VIKAS ...
B135 Shivam Mishra SVN...
B081 ADITYA YADAV SV...
B110 KRISHNA PANDEY ...
33 others
You
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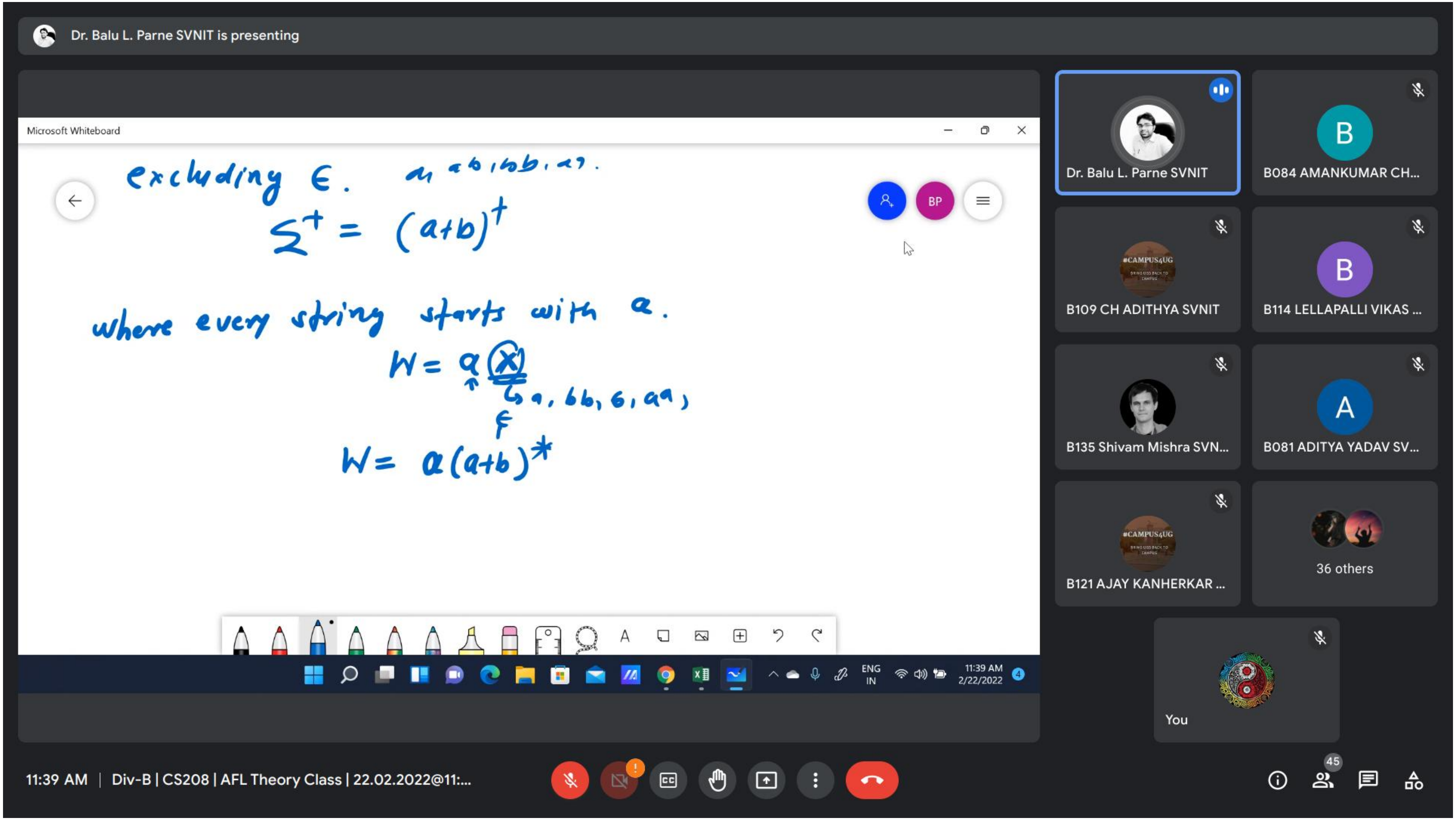
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excluding ε.
Σ+ = (a+b)+
where every string starts with a.
W = a (X)
a, bb, b, aa,
W = a(a+b)*
BP
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B084 AMANKUMAR CH...
B109 CH ADITHYA SVNIT
B114 LELLAPALLI VIKAS ...
B135 Shivam Mishra SVN...
B081 ADITYA YADAV SV...
B121 AJAY KANHERKAR ...
36 others
You
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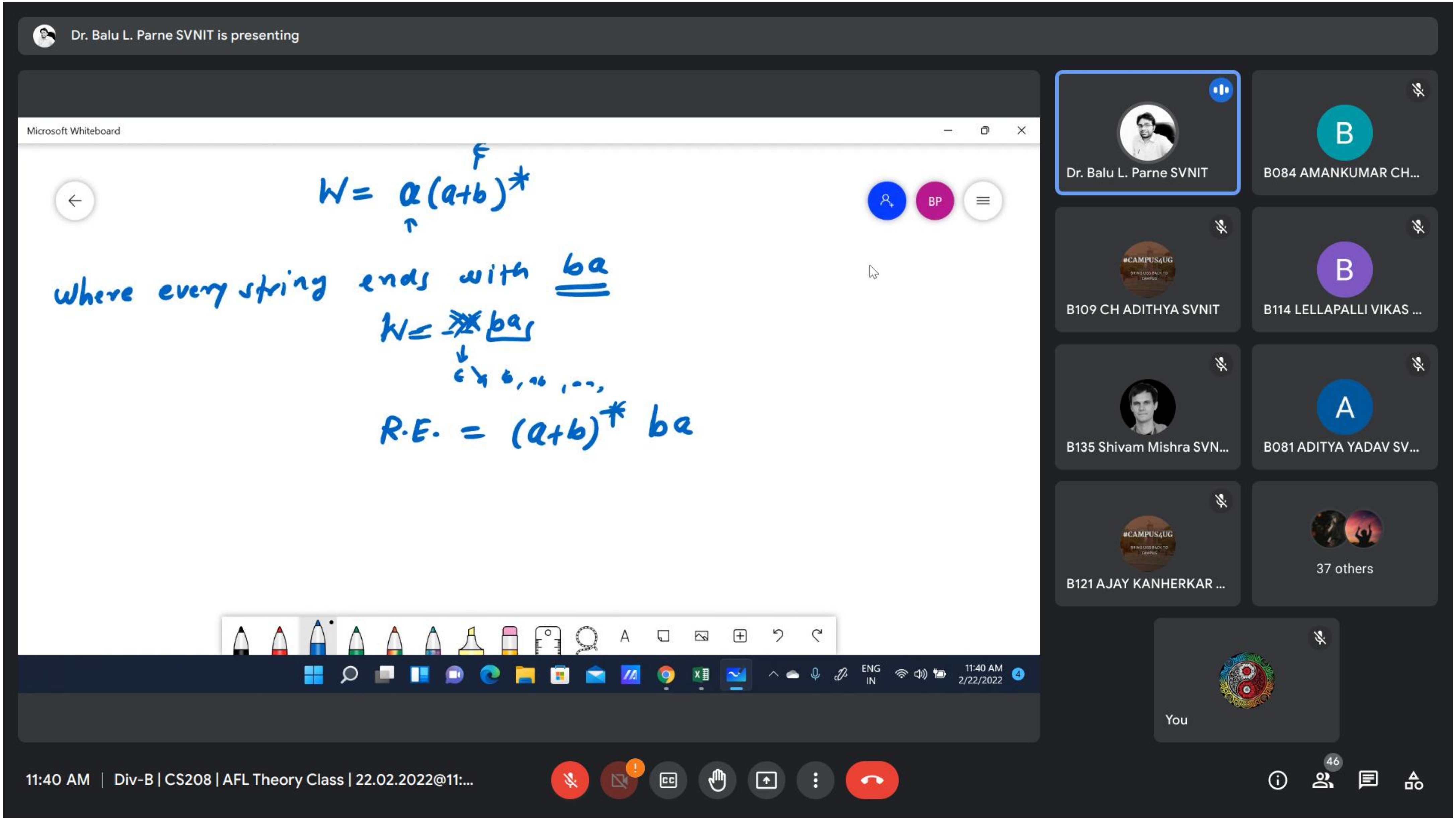

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F
W = a(a+b)*
where every string ends with ba
W = ba,
ε, a, b, ab, ...,
R.E. = (a+b)* ba
Dr. Balu L. Parne SVNIT
B084 AMANKUMAR CH...
B109 CH ADITHYA SVNIT
B114 LELLAPALLI VIKAS ...
B135 Shivam Mishra SVN...
B081 ADITYA YADAV SV...
B121 AJAY KANHERKAR ...
37 others
You
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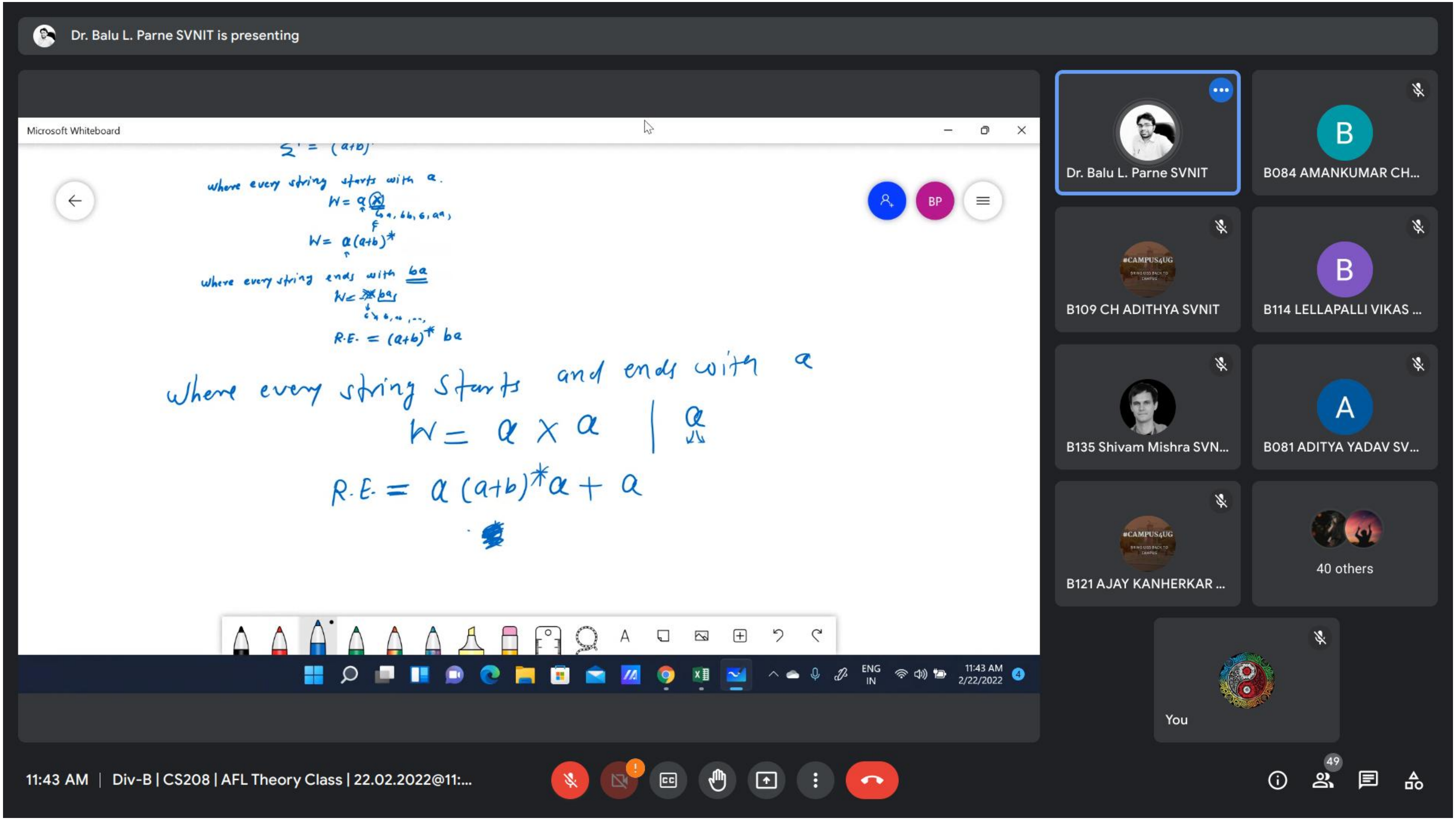
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Microsoft Whiteboard
where every string starts with a.
W = a(a+b)*
where every string ends with ba
R.E. = (a+b)* ba
where every string starts and ends with a
W = a x a | a
R.E. = a (a+b)* a + a
Dr. Balu L. Parne SVNIT
B084 AMANKUMAR CH...
B109 CH ADITHYA SVNIT
B114 LELLAPALLI VIKAS ...
B135 Shivam Mishra SVN...
B081 ADITYA YADAV SV...
B121 AJAY KANHERKAR ...
40 others
You
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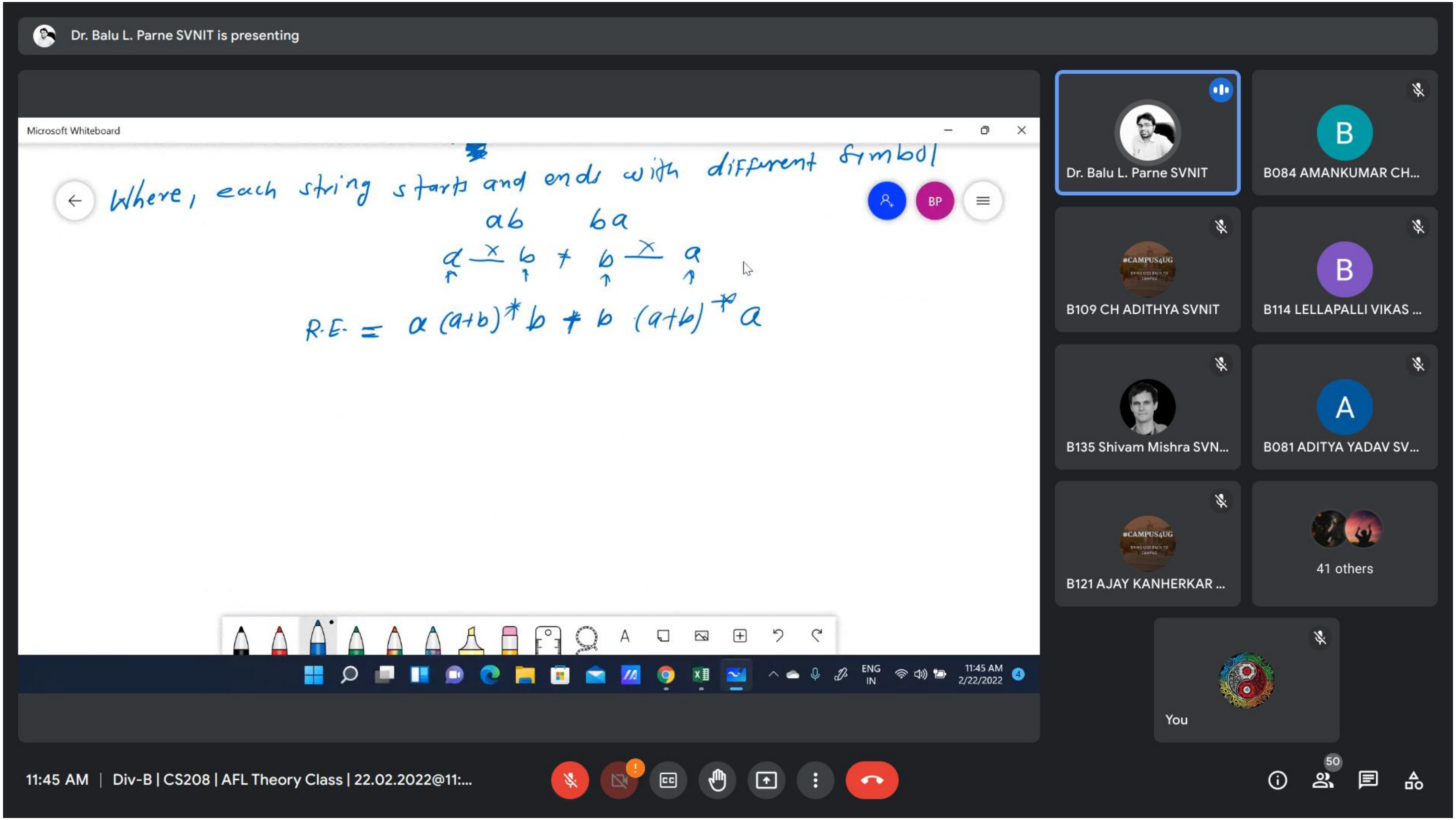
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Where, each string starts and ends with different symbol
ab ba
a x b + b x a
R.E. = a (a+b)* b + b (a+b)* a
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B084 AMANKUMAR CH...
B109 CH ADITHYA SVNIT
B114 LELLAPALLI VIKAS ...
B135 Shivam Mishra SVN...
B081 ADITYA YADAV SV...
B121 AJAY KANHERKAR ...
41 others
You
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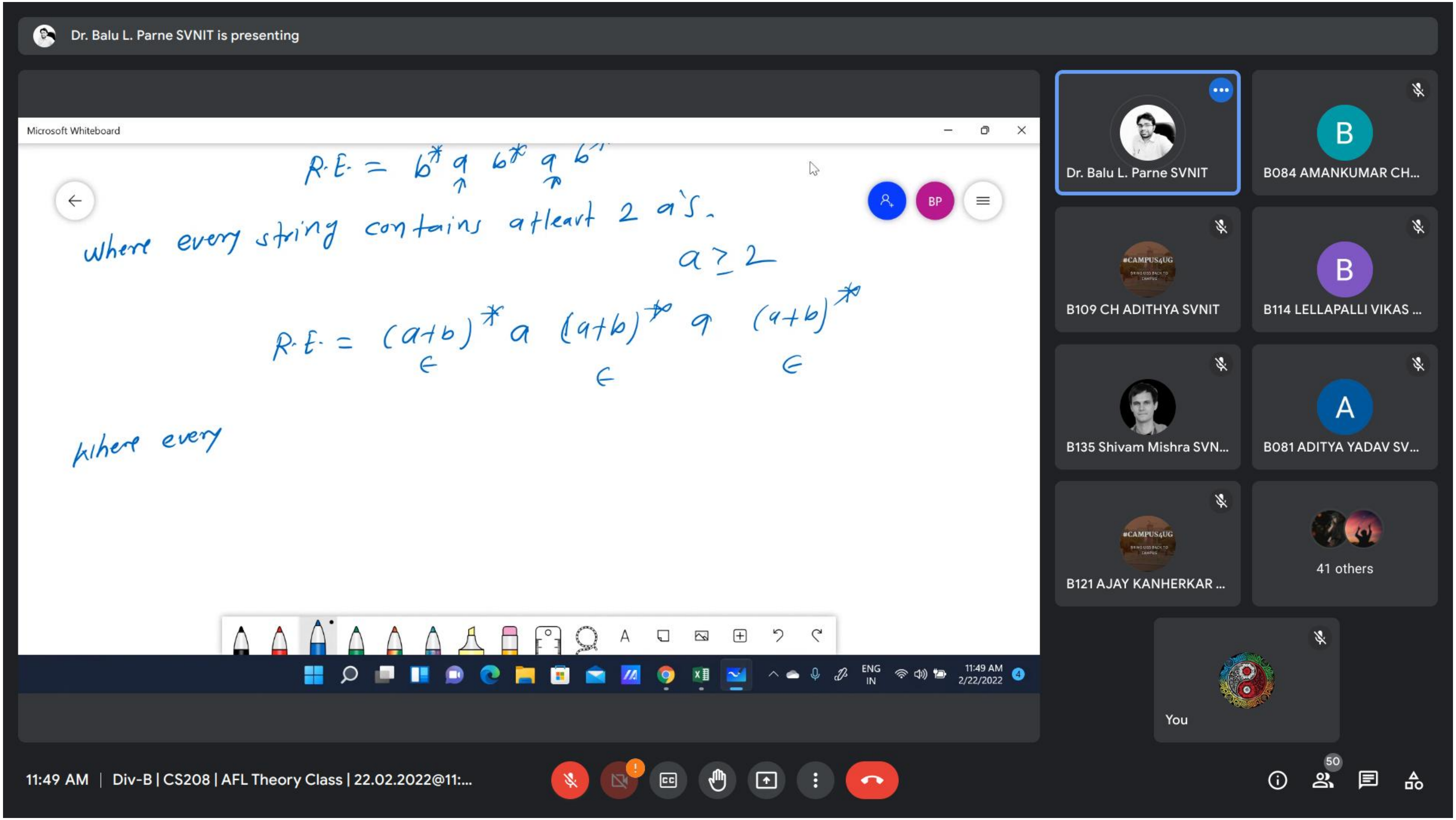
Dr. Balu L. Parne SVNIT is presenting
Microsoft Whiteboard
R.E = b* a b* a b*
where every string contains atleast 2 a's.
a ≥ 2
R.E. = (a+b)* a (a+b)* a (a+b)*
ϵ ϵ ϵ
where every
BP
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B109 CH ADITHYA SVNIT
B114 LELLAPALLI VIKAS ...
B135 Shivam Mishra SVN...
B081 ADITYA YADAV SV...
B121 AJAY KANHERKAR ...
41 others
You
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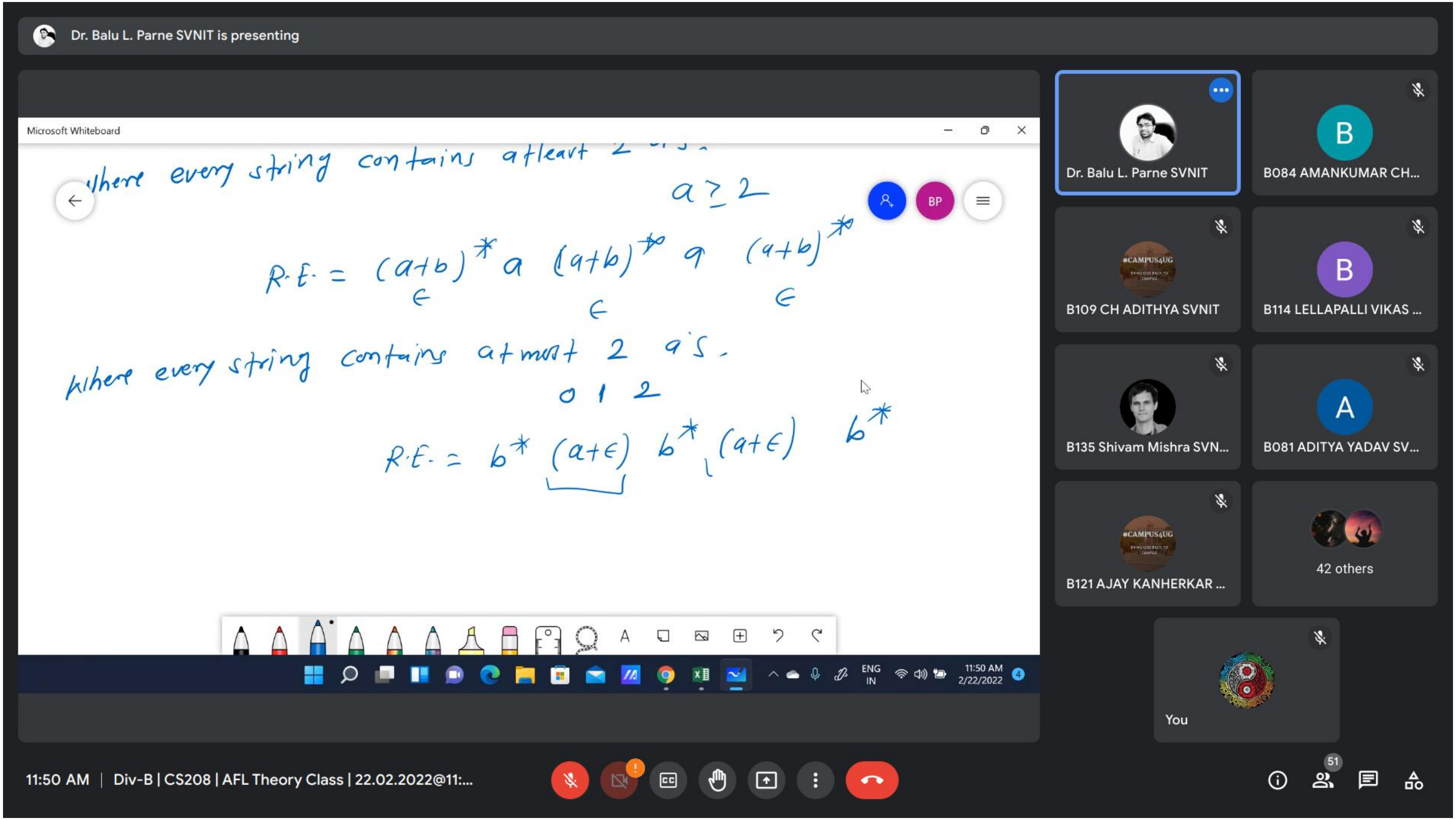
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Microsoft Whiteboard
where every string contains atleast 2 a's.
a ≥ 2
R.E. = (a+b)* a (a+b)* a (a+b)*
∈ ∈ ∈
where every string contains atmost 2 a's.
0 1 2
R.E. = b* (a+∈) b* (a+∈) b*
Dr. Balu L. Parne SVNIT
B084 AMANKUMAR CH...
B109 CH ADITHYA SVNIT
B114 LELLAPALLI VIKAS ...
B135 Shivam Mishra SVN...
B081 ADITYA YADAV SV...
B121 AJAY KANHERKAR ...
42 others
You
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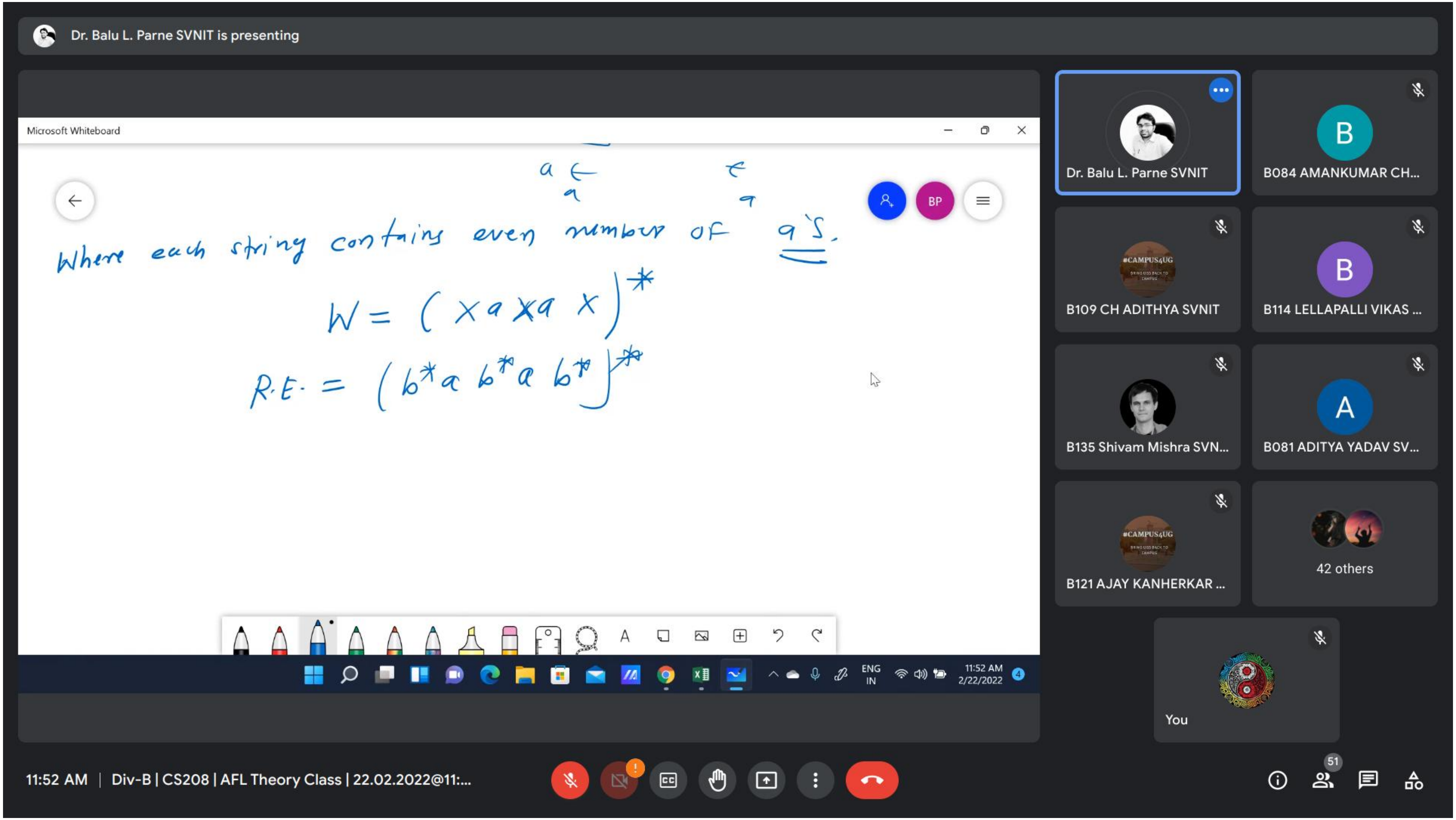
Dr. Balu L. Parne SVNIT is presenting
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Where each string contains even number of a's.
W = (x a x a x)*
R.E. = (b* a b* a b*)*
Dr. Balu L. Parne SVNIT
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B109 CH ADITHYA SVNIT
B114 LELLAPALLI VIKAS ...
B135 Shivam Mishra SVN...
B081 ADITYA YADAV SV...
B121 AJAY KANHERKAR ...
42 others
You
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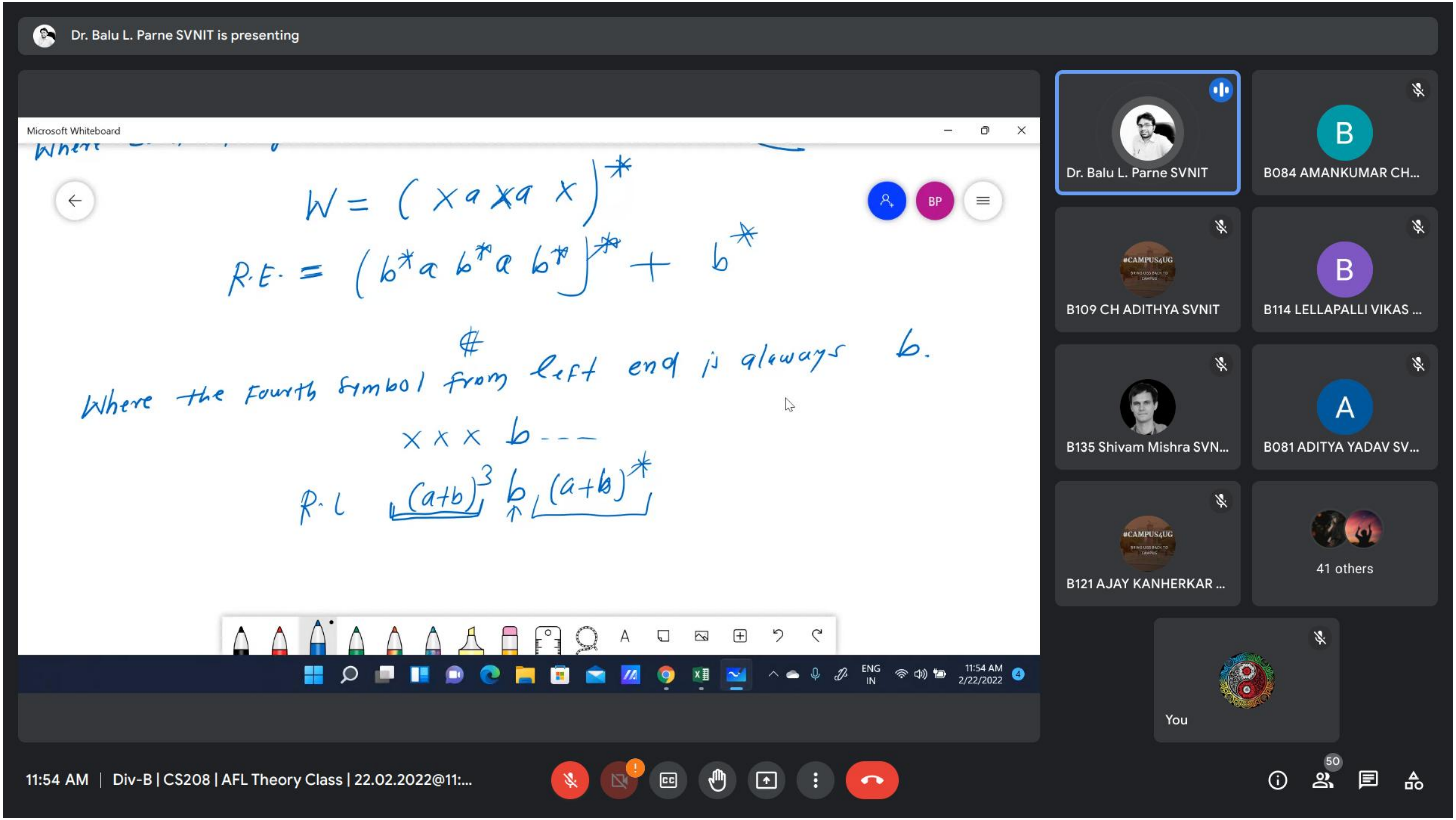
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Microsoft Whiteboard
$W = (x a x a x)^*$
$R.E. = (b^* a b^* a b^*)^* + b^*$
#
Where the Fourth symbol from left end is always b.
$x x x b - - -$
$R.L \; (a+b)^3 \, b \, (a+b)^*$
Dr. Balu L. Parne SVNIT
B084 AMANKUMAR CH...
B109 CH ADITHYA SVNIT
B114 LELLAPALLI VIKAS ...
B135 Shivam Mishra SVN...
B081 ADITYA YADAV SV...
B121 AJAY KANHERKAR ...
41 others
You
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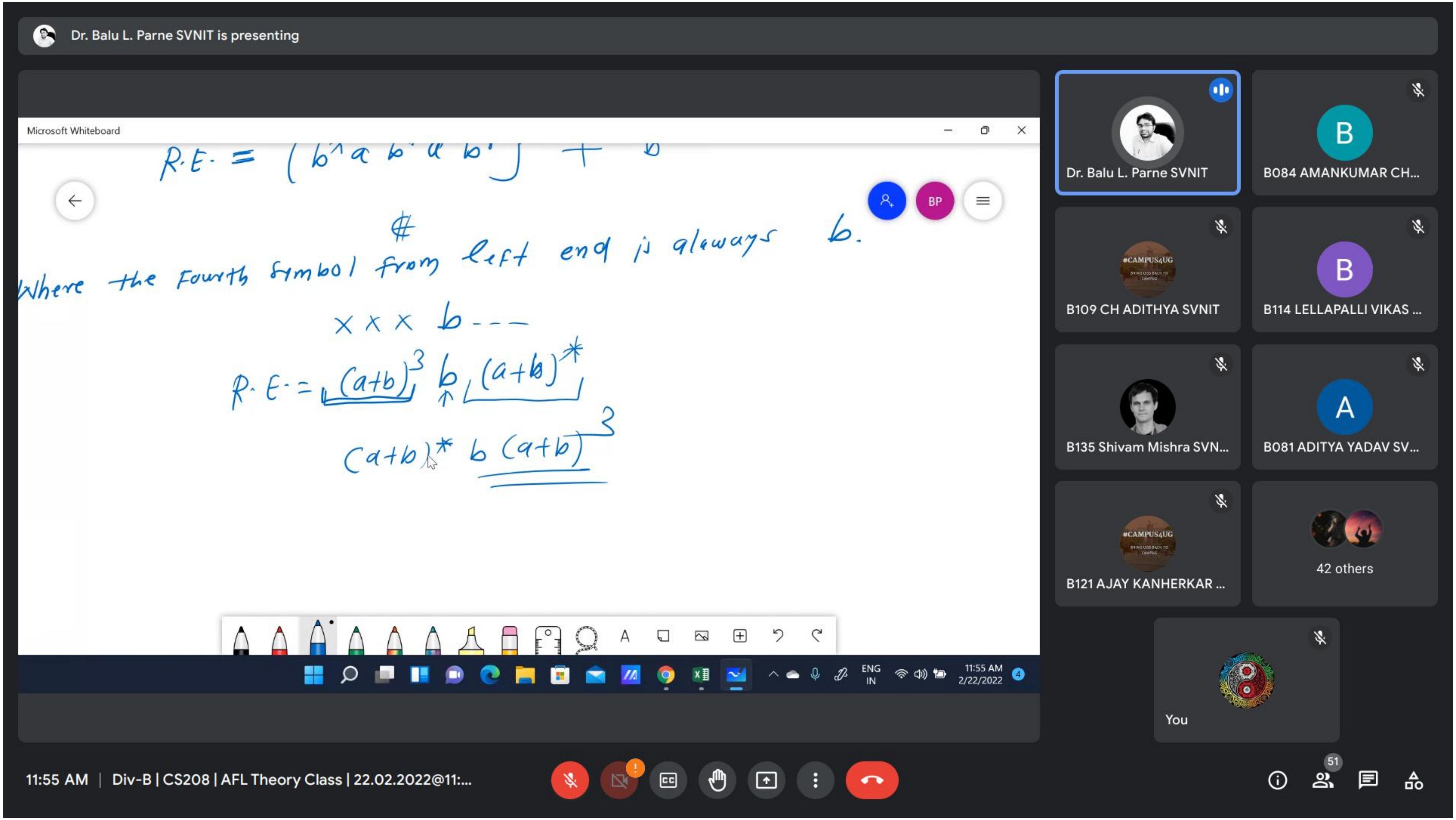
Dr. Balu L. Parne SVNIT is presenting
Microsoft Whiteboard
Where the Fourth symbol from left end is always b.
x x x b - - -
R.E. = $(a+b)^3 b (a+b)^*$
$(a+b)^* b (a+b)^3$
Dr. Balu L. Parne SVNIT
B084 AMANKUMAR CH...
B109 CH ADITHYA SVNIT
B114 LELLAPALLI VIKAS ...
B135 Shivam Mishra SVN...
B081 ADITYA YADAV SV...
B121 AJAY KANHERKAR ...
42 others
You
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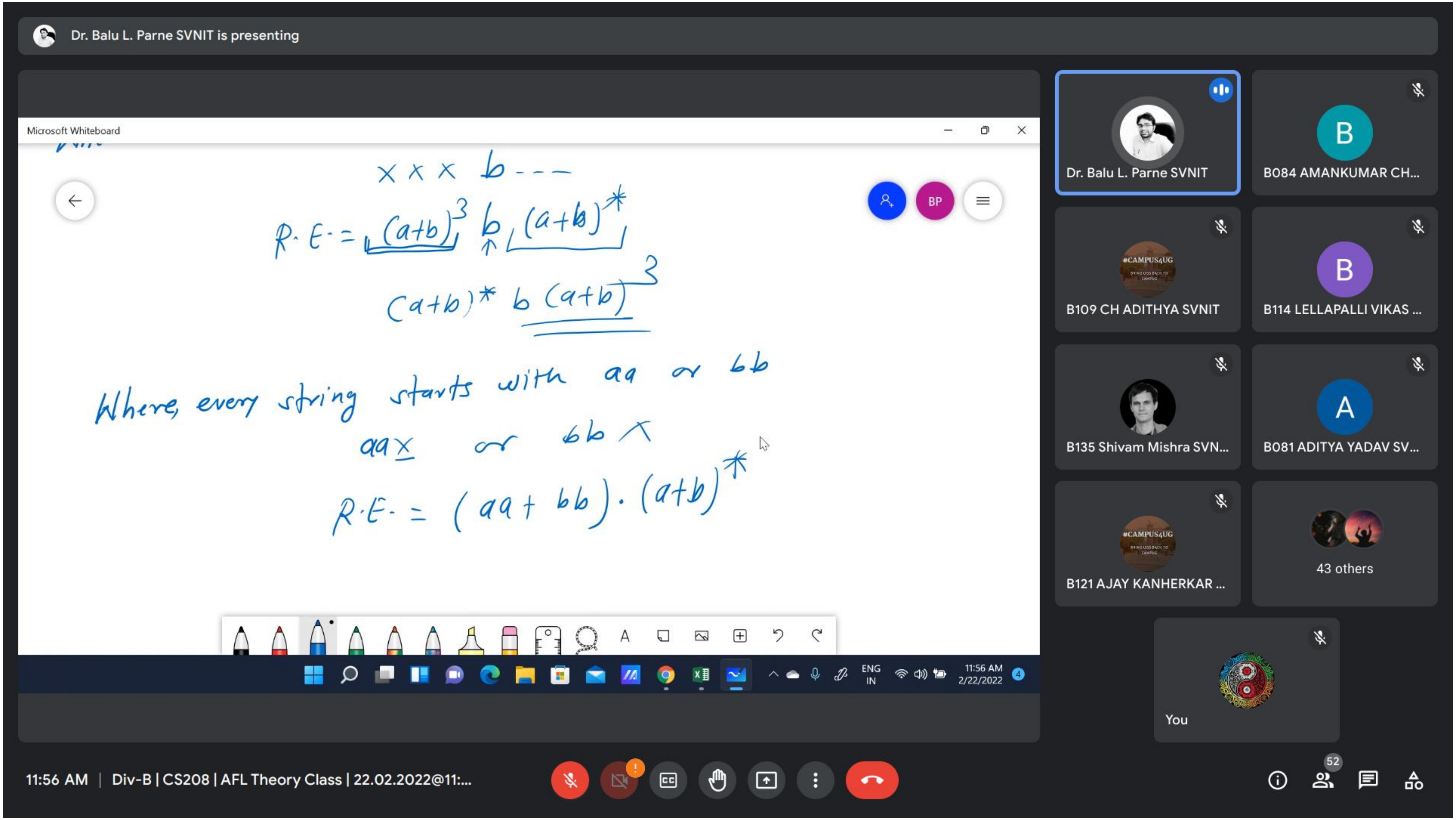
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Microsoft Whiteboard
x x x b - - -
R.E. = (a+b)^3 b (a+b)*
(a+b)* b (a+b)^3
Where, every string starts with aa or bb
aax or bbx
R.E. = (aa + bb).(a+b)*
Dr. Balu L. Parne SVNIT
B084 AMANKUMAR CH...
B109 CH ADITHYA SVNIT
B114 LELLAPALLI VIKAS ...
B135 Shivam Mishra SVN...
B081 ADITYA YADAV SV...
B121 AJAY KANHERKAR ...
43 others
You
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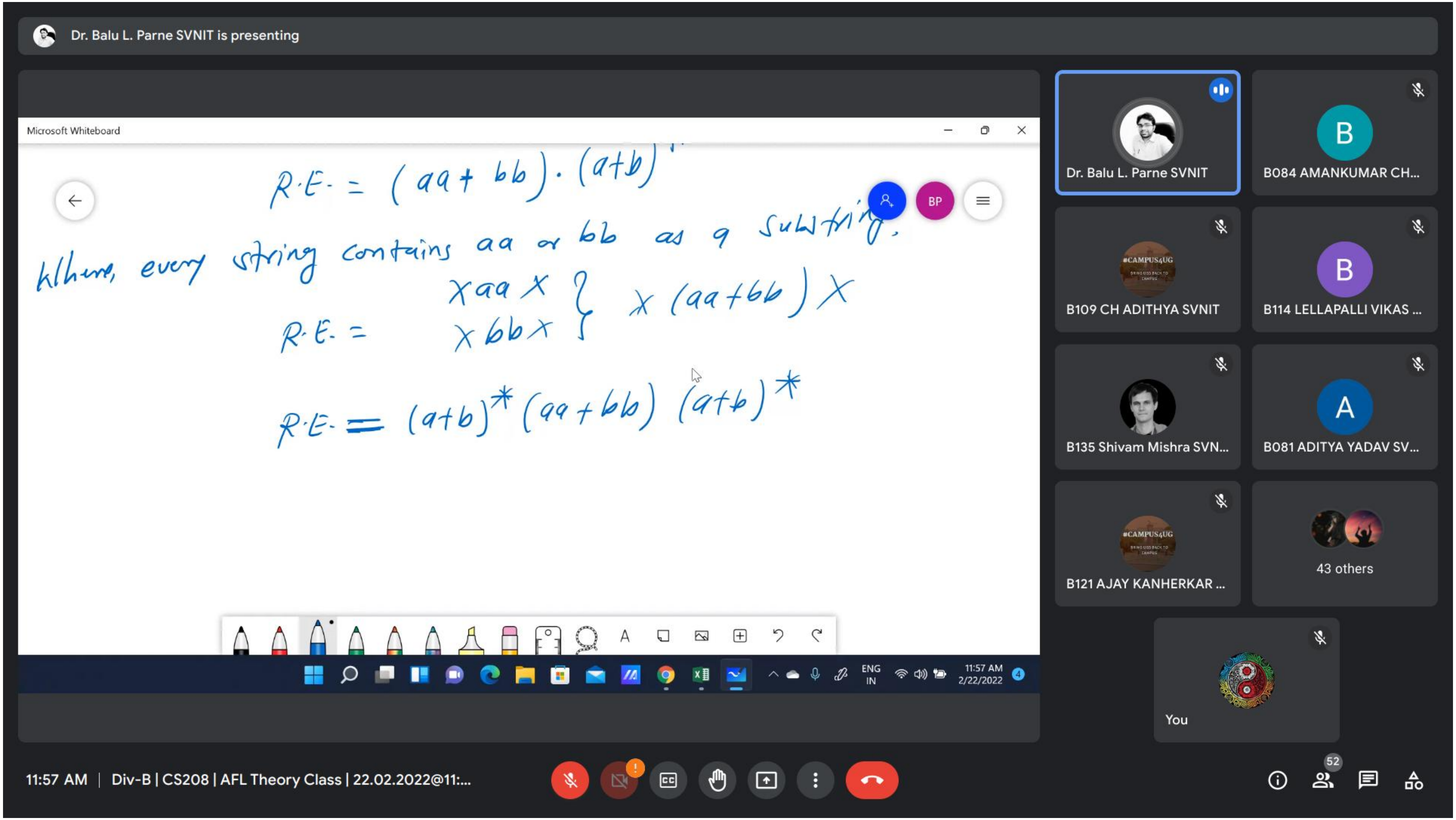
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R.E. = (aa + bb).(a+b)
Where, every string contains aa or bb as a substring.
R.E. = xaax, xbbx } x(aa+bb)x
R.E. = (a+b)* (aa+bb) (a+b)*
Dr. Balu L. Parne SVNIT
B084 AMANKUMAR CH...
B109 CH ADITHYA SVNIT
B114 LELLAPALLI VIKAS ...
B135 Shivam Mishra SVN...
B081 ADITYA YADAV SV...
B121 AJAY KANHERKAR ...
43 others
You
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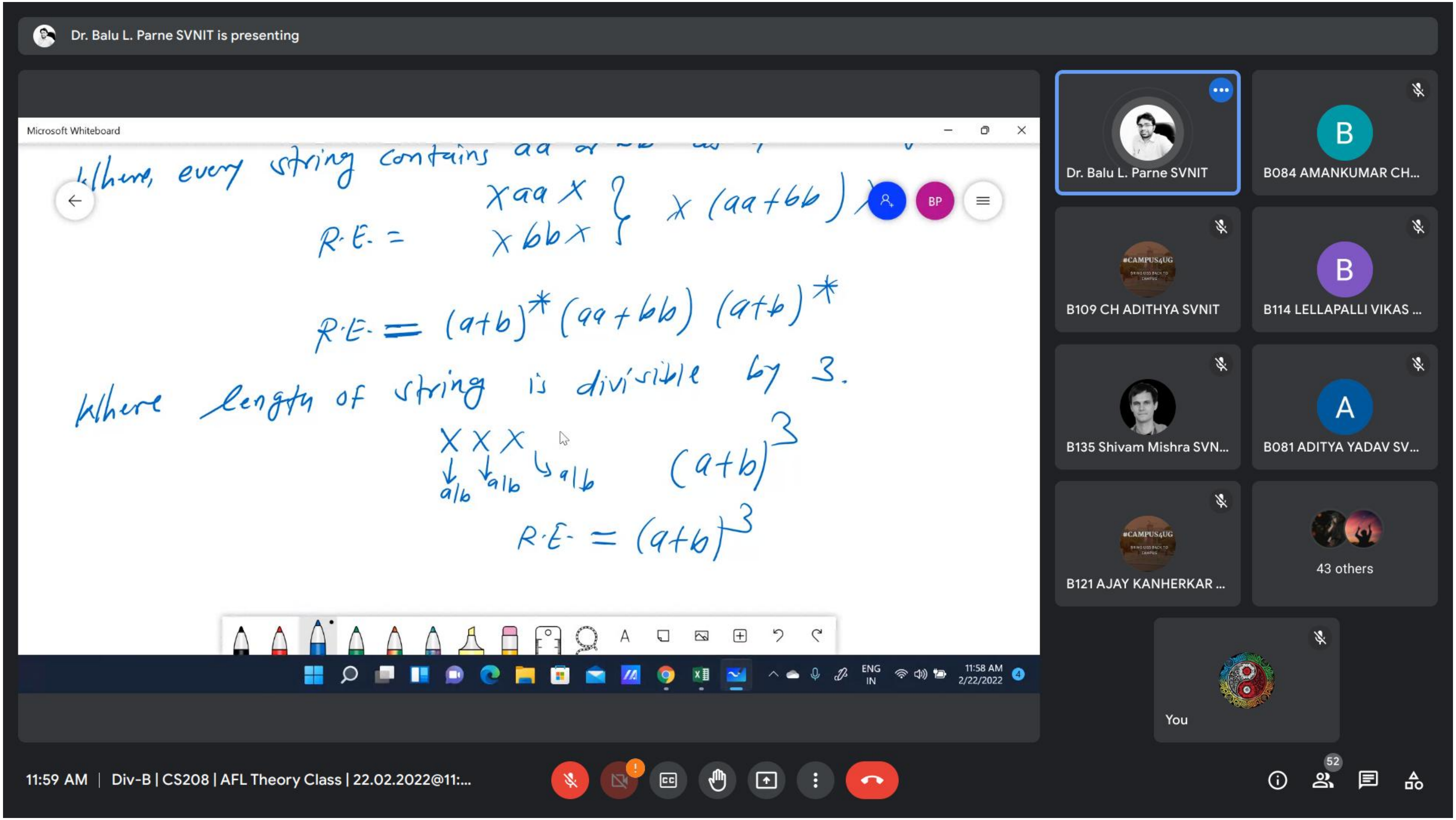

Dr. Balu L. Parne SVNIT is presenting
Microsoft Whiteboard
where every string contains aa or bb as ...
R.E. = xaax }{ xbbx } x(aa+bb)x
R.E. = (a+b)* (aa+bb) (a+b)*
where length of string is divisible by 3.
X X X
a|b a|b a|b
(a+b)^3
R.E. = (a+b)^3
11:58 AM
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Dr. Balu L. Parne SVNIT
B084 AMANKUMAR CH...
B109 CH ADITHYA SVNIT
B114 LELLAPALLI VIKAS ...
B135 Shivam Mishra SVN...
B081 ADITYA YADAV SV...
B121 AJAY KANHERKAR ...
43 others
You
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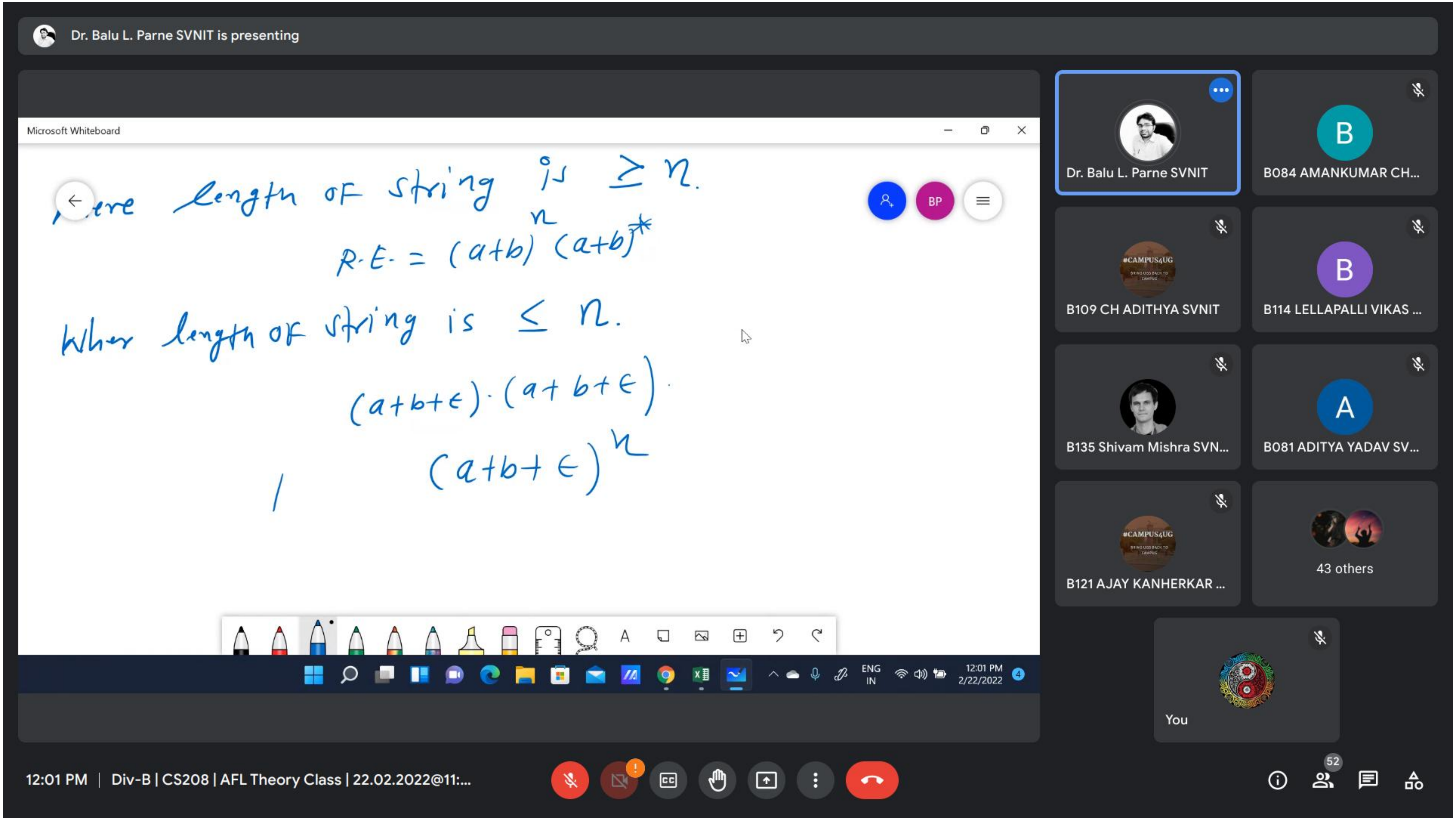
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Microsoft Whiteboard
where length of string is $\geq n$.
R.E. $= (a+b)^n (a+b)^*$
When length of string is $\leq n$.
$(a+b+\epsilon)\cdot(a+b+\epsilon)\cdot$
$(a+b+\epsilon)^n$
Dr. Balu L. Parne SVNIT
B084 AMANKUMAR CH...
B109 CH ADITHYA SVNIT
B114 LELLAPALLI VIKAS ...
B135 Shivam Mishra SVN...
B081 ADITYA YADAV SV...
B121 AJAY KANHERKAR ...
43 others
You
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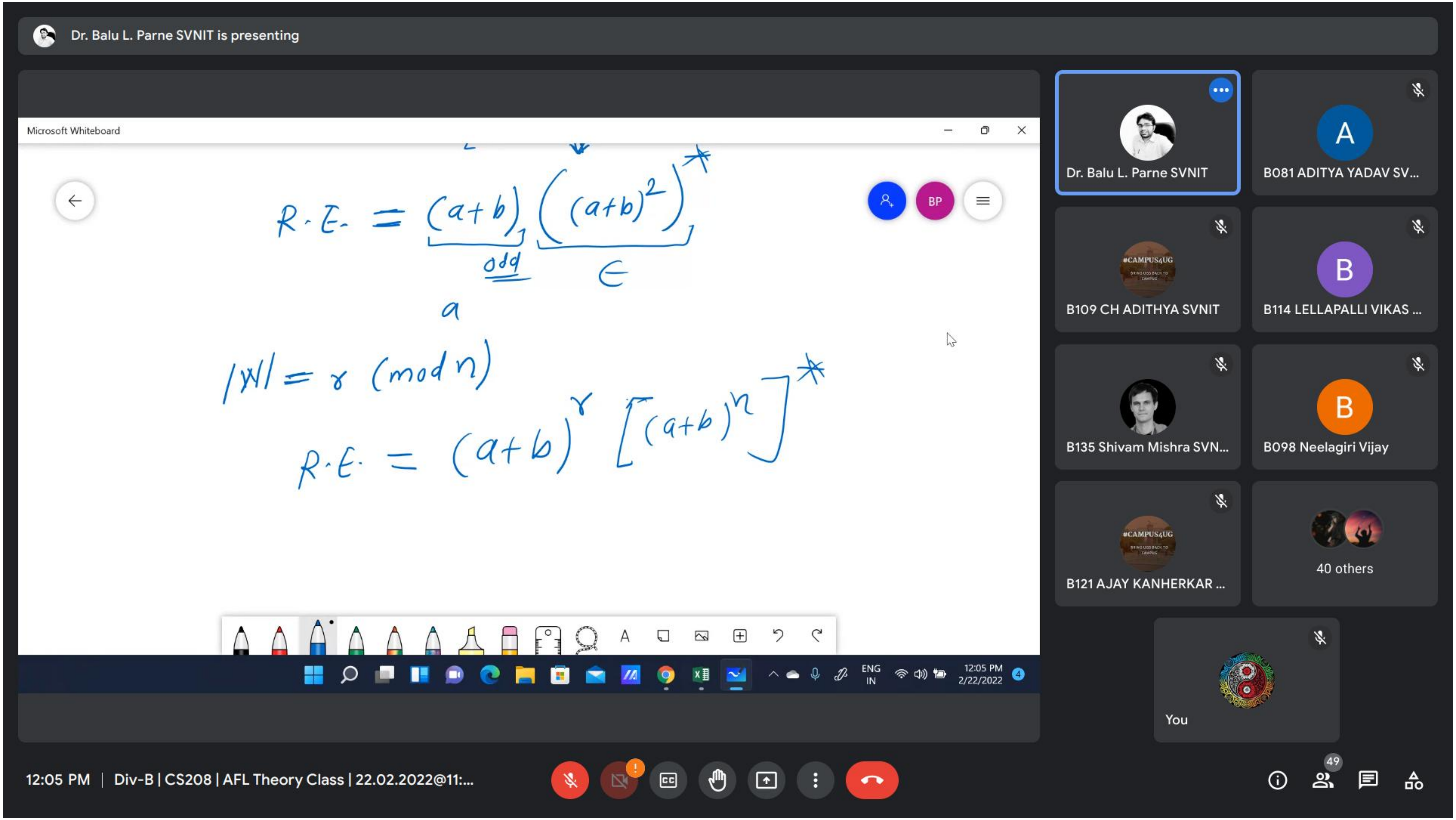

Dr. Balu L. Parne SVNIT is presenting
Microsoft Whiteboard
$R.E. = \underbrace{(a+b)}_{odd}\underbrace{\left((a+b)^2\right)^*}_{\in}$
a
$|w| = r \pmod n$
$R.E. = (a+b)^r\left[(a+b)^n\right]^*$
BP
Dr. Balu L. Parne SVNIT
B081 ADITYA YADAV SV...
B109 CH ADITHYA SVNIT
B114 LELLAPALLI VIKAS ...
B135 Shivam Mishra SVN...
B098 Neelagiri Vijay
B121 AJAY KANHERKAR ...
40 others
You
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$|W| = r \pmod{n}$

$R.E. = (a+b)^{r} \left[(a+b)^{n} \right]^{*}$

Equivalence Between Finite Automata & Regular Expression :-

(1) Arden's Lemma (only DFA & NFA)

(2) State Elimination method (DFA, NFA, ε-NFA, Transition Graph)

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B109 CH ADITHYA SVNIT

B114 LELLAPALLI VIKAS ...

B135 Shivam Mishra SVN...

B098 Neelagiri Vijay

B121 AJAY KANHERKAR ...

39 others

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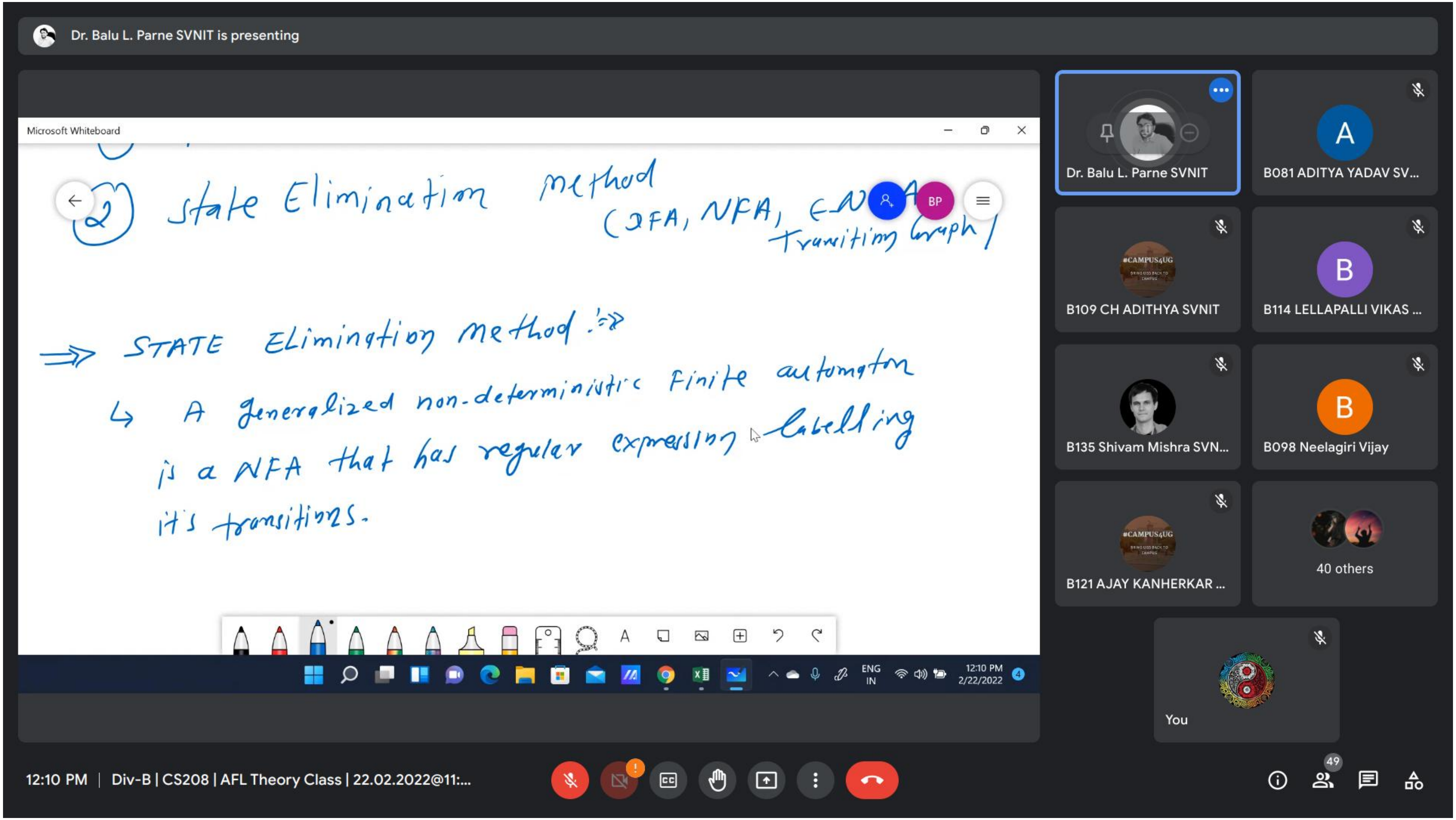
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(2) state Elimination method
(DFA, NFA, ε-NFA, Transition Graph)
⇒ STATE Elimination method :-
↳ A generalized non-deterministic finite automaton is a NFA that has regular expression labelling it's transitions.
Dr. Balu L. Parne SVNIT
B081 ADITYA YADAV SV...
B109 CH ADITHYA SVNIT
B114 LELLAPALLI VIKAS ...
B135 Shivam Mishra SVN...
B098 Neelagiri Vijay
B121 AJAY KANHERKAR ...
40 others
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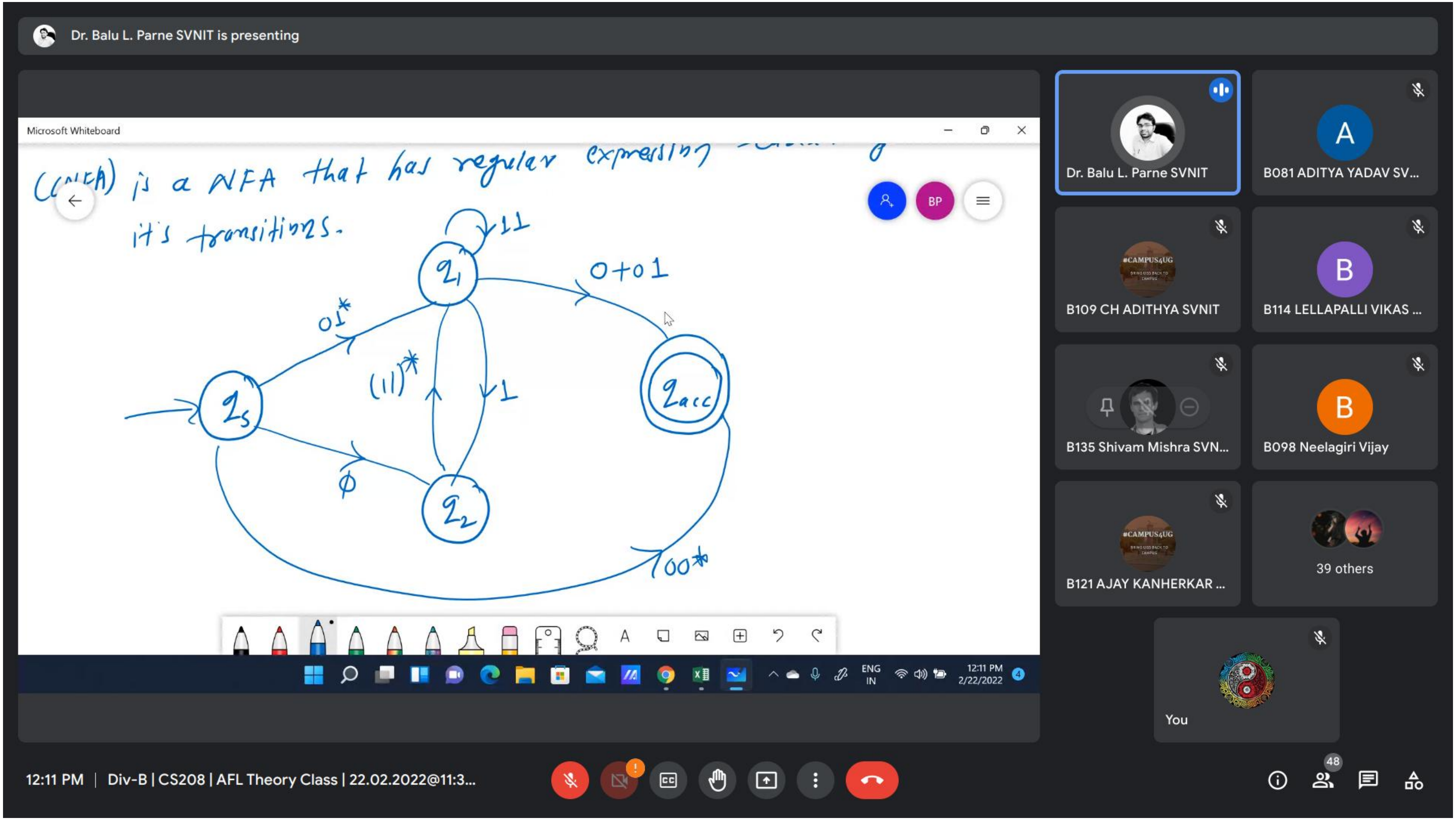
Dr. Balu L. Parne SVNIT is presenting
Microsoft Whiteboard
(NFA) is a NFA that has regular expression
it's transitions.
11
0+01
01*
(11)*
1
ϕ
00*
q_1
q_s
q_2
q_{acc}
BP
ENG
IN
12:11 PM
2/22/2022
Dr. Balu L. Parne SVNIT
B081 ADITYA YADAV SV...
B109 CH ADITHYA SVNIT
B114 LELLAPALLI VIKAS ...
B135 Shivam Mishra SVN...
B098 Neelagiri Vijay
B121 AJAY KANHERKAR ...
39 others
You
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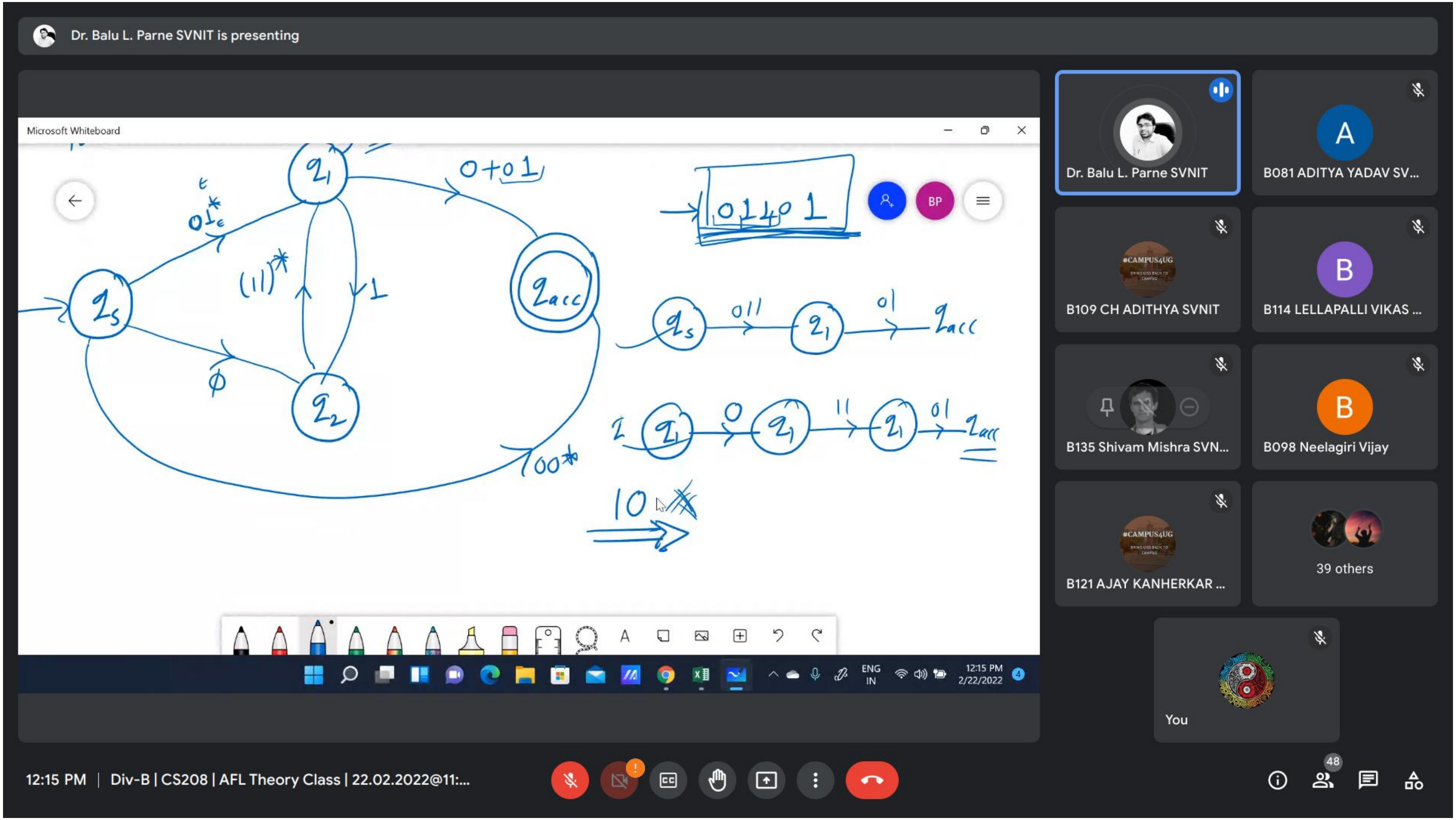
Dr. Balu L. Parne SVNIT is presenting
Microsoft Whiteboard
0+01
(11)*
1
ϕ
00*
011
01
BP
Dr. Balu L. Parne SVNIT
B081 ADITYA YADAV SV...
B109 CH ADITHYA SVNIT
B114 LELLAPALLI VIKAS ...
B135 Shivam Mishra SVN...
B098 Neelagiri Vijay
B121 AJAY KANHERKAR ...
39 others
You
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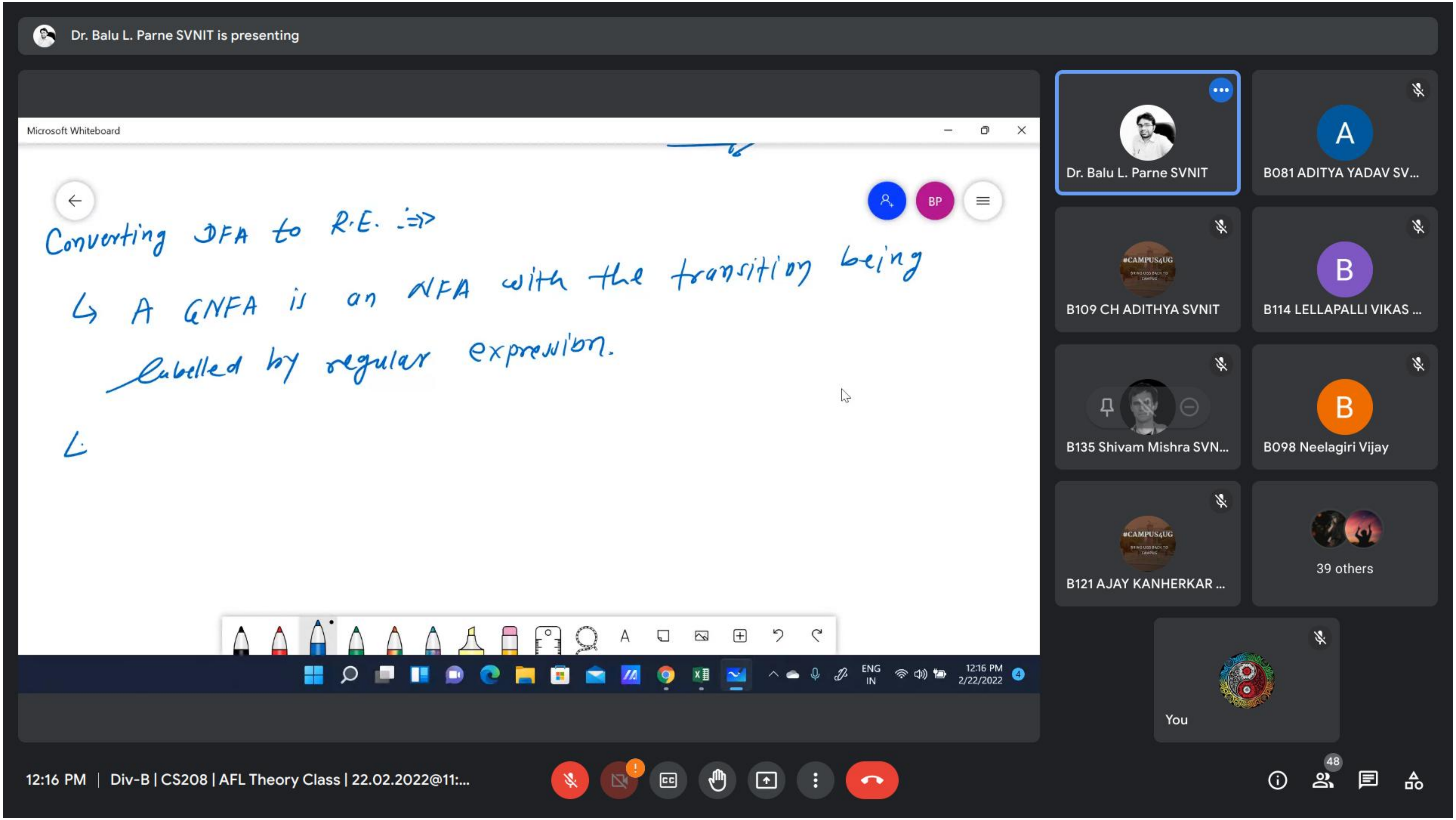
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BP
Converting DFA to R.E. :=>
↳ A GNFA is an NFA with the transition being labelled by regular expression.
↳
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B109 CH ADITHYA SVNIT
B114 LELLAPALLI VIKAS ...
B135 Shivam Mishra SVN...
B098 Neelagiri Vijay
B121 AJAY KANHERKAR ...
39 others
You
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labelled by regular expression.

↳ A GNFA is said to accept string w if w can be written as $w = w_1 w_2 w_3 \cdots w_k$ and there exists states $q_0, q_1, q_2, \ldots q_k$ in the GNFA such that

i

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B081 ADITYA YADAV SV...

B109 CH ADITHYA SVNIT

B114 LELLAPALLI VIKAS ...

B135 Shivam Mishra SVN...

B098 Neelagiri Vijay

B121 AJAY KANHERKAR ...

39 others

You

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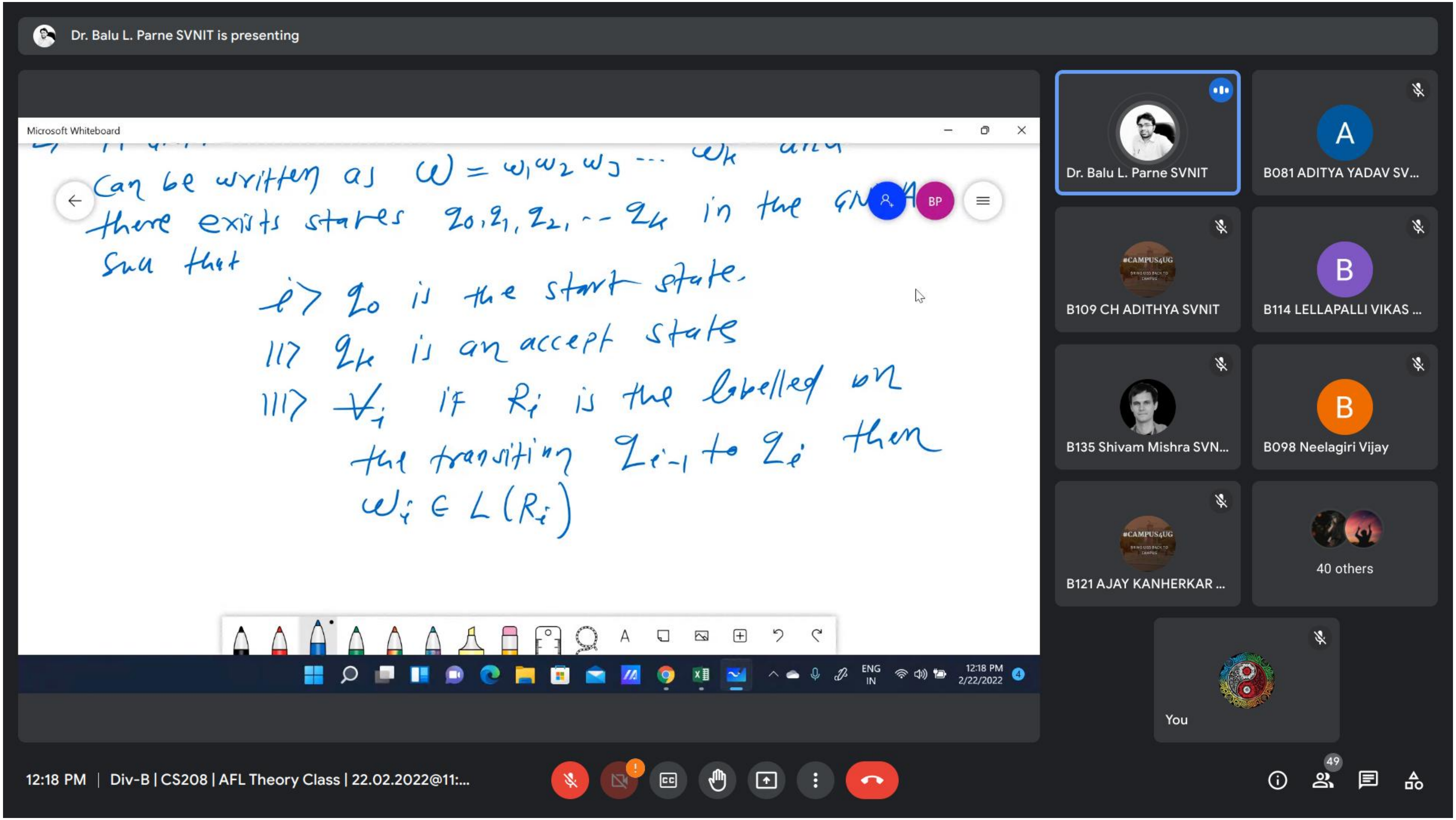
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can be written as w = w1 w2 w3 ... wk and
there exists states q0, q1, q2, -- qk in the GNFA
such that
i> q0 is the start state.
ii> qk is an accept state
iii> ∀i if Ri is the labelled on
the transition qi-1 to qi then
wi ∈ L(Ri)
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B081 ADITYA YADAV SV...
B109 CH ADITHYA SVNIT
B114 LELLAPALLI VIKAS ...
B135 Shivam Mishra SVN...
B098 Neelagiri Vijay
B121 AJAY KANHERKAR ...
40 others
You
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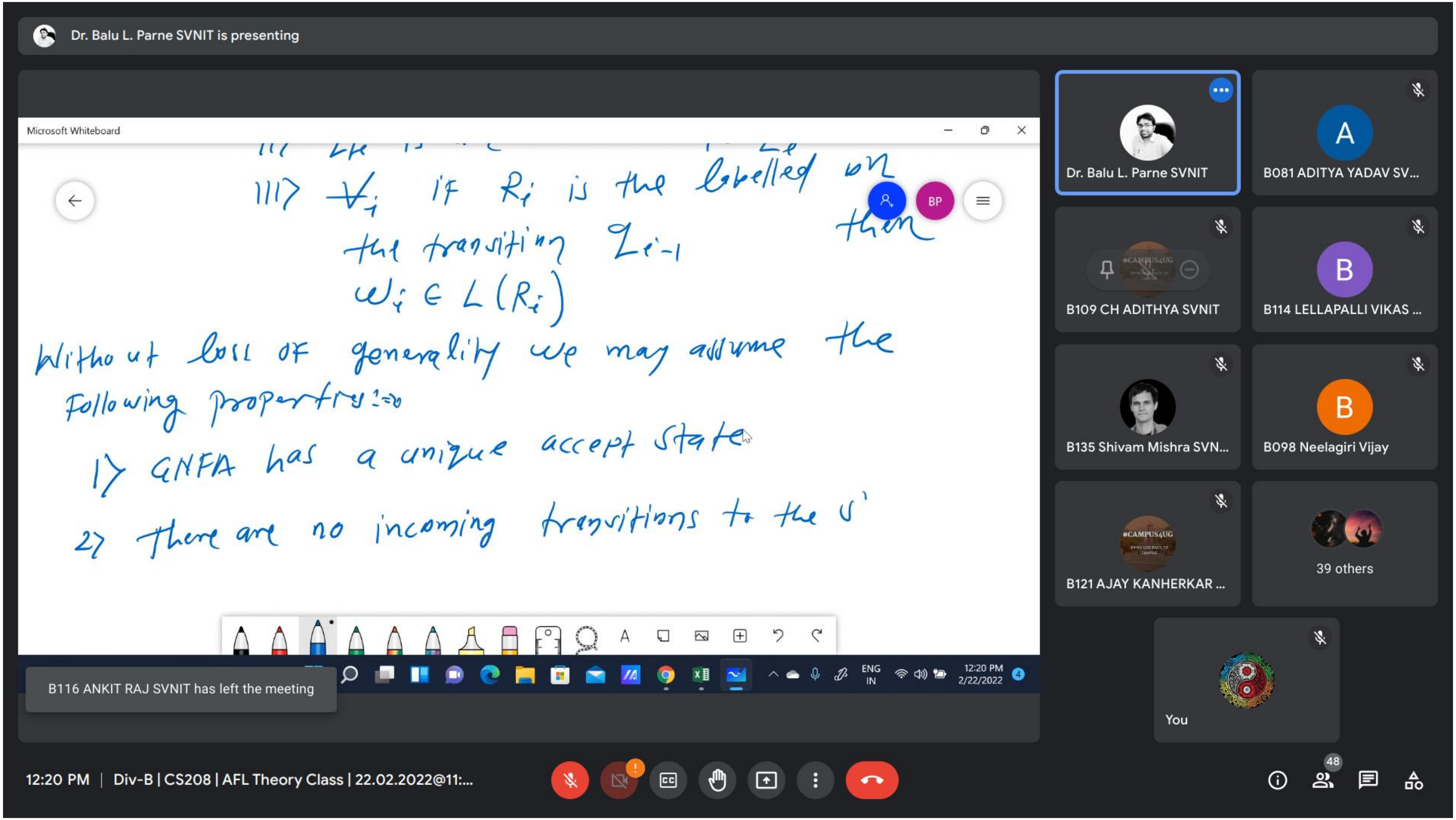
Dr. Balu L. Parne SVNIT is presenting
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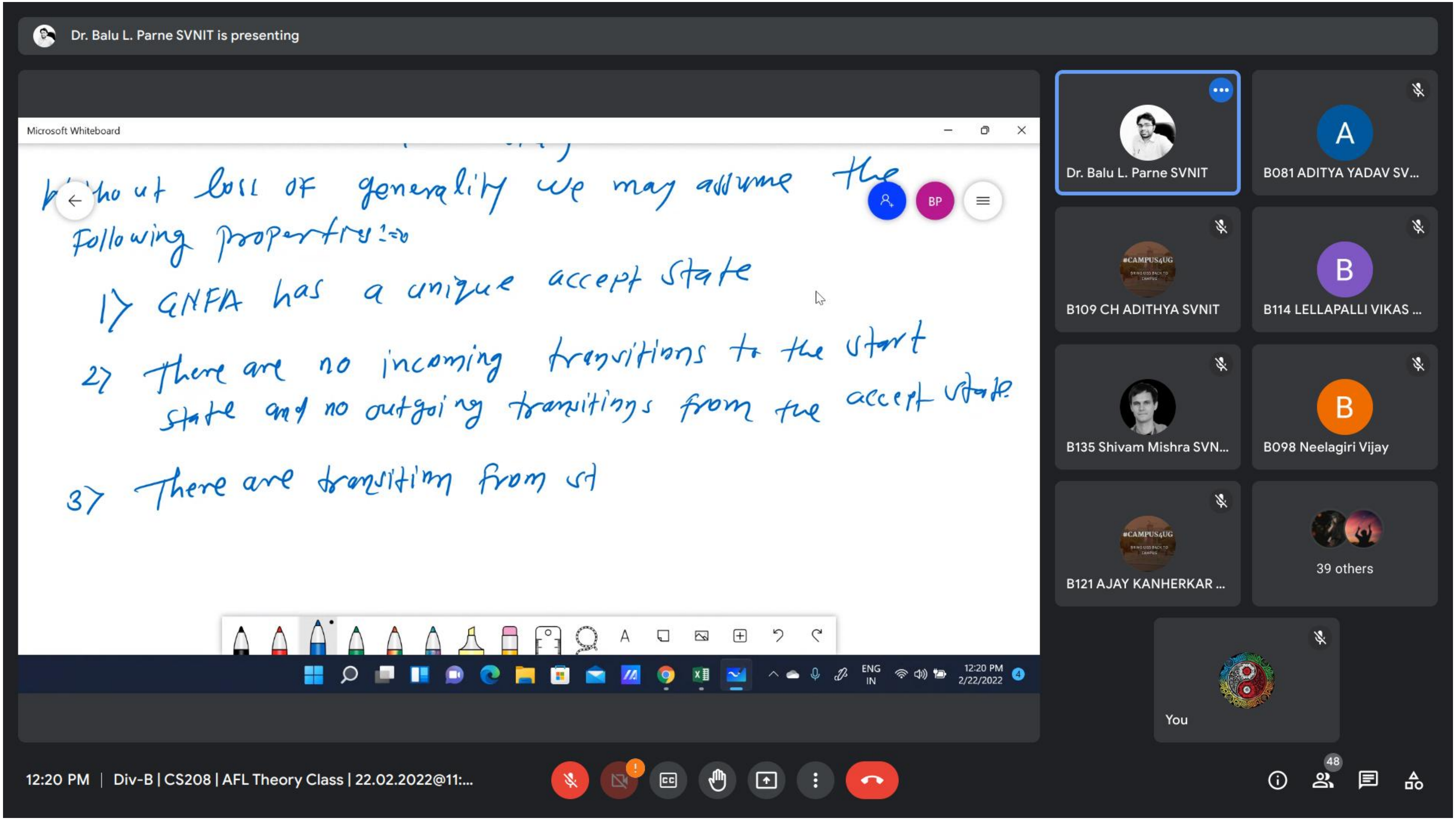
iii) $\forall_i$ if R_i is the labelled on the transition q_{i-1} then
$w_i \in L(R_i)$
Without loss of generality we may assume the following properties:-
1) GNFA has a unique accept state
2) There are no incoming transitions to the s'
B116 ANKIT RAJ SVNIT has left the meeting
Dr. Balu L. Parne SVNIT
B081 ADITYA YADAV SV...
B109 CH ADITHYA SVNIT
B114 LELLAPALLI VIKAS ...
B135 Shivam Mishra SVN...
B098 Neelagiri Vijay
B121 AJAY KANHERKAR ...
39 others
You
12:20 PM | Div-B | CS208 | AFL Theory Class | 22.02.2022@11:...



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Microsoft Whiteboard
Without loss of generality we may assume the following properties:-
1) GNFA has a unique accept state
2) There are no incoming transitions to the start state and no outgoing transitions from the accept state
3) There are transition from st
BP
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B081 ADITYA YADAV SV...
B109 CH ADITHYA SVNIT
B114 LELLAPALLI VIKAS ...
B135 Shivam Mishra SVN...
B098 Neelagiri Vijay
B121 AJAY KANHERKAR ...
39 others
You
ENG IN
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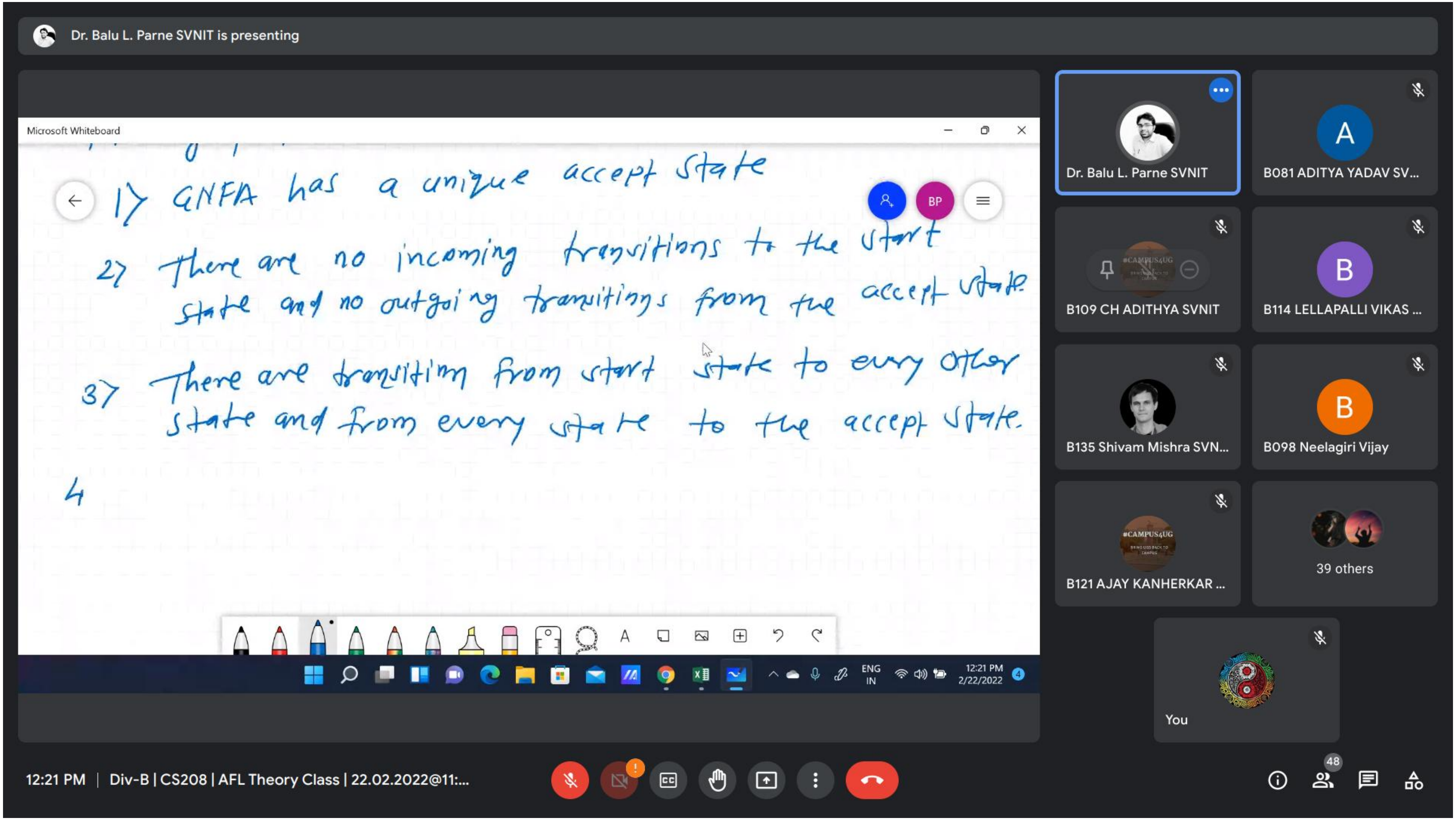
Dr. Balu L. Parne SVNIT is presenting
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1) GNFA has a unique accept state
2) There are no incoming transitions to the start state and no outgoing transitions from the accept state
3) There are transition from start state to every other state and from every state to the accept state.
4
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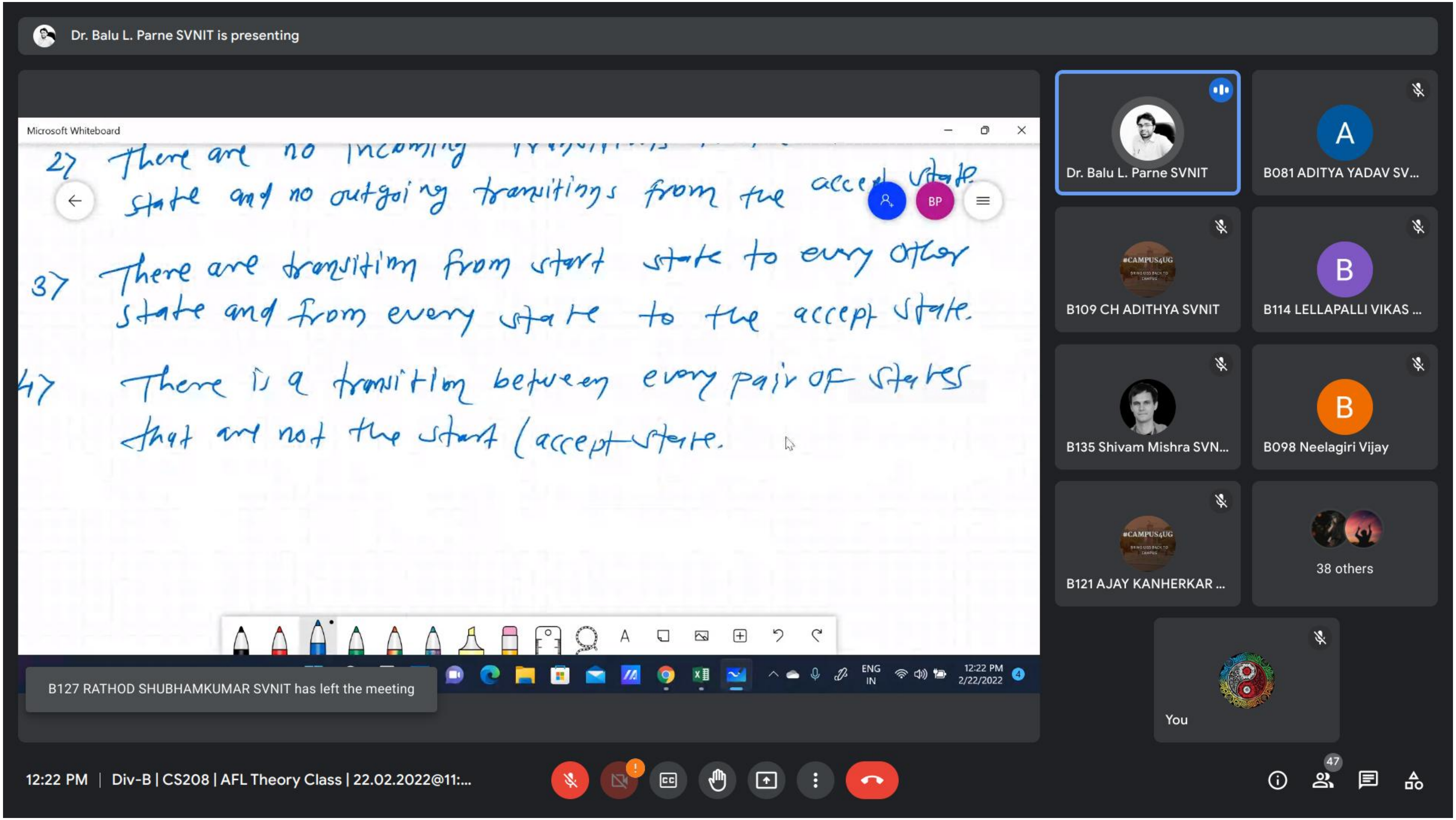
B081 ADITYA YADAV SV...
B109 CH ADITHYA SVNIT
B114 LELLAPALLI VIKAS ...
B135 Shivam Mishra SVN...
B098 Neelagiri Vijay
B121 AJAY KANHERKAR ...
39 others
You
12:21 PM | Div-B | CS208 | AFL Theory Class | 22.02.2022@11:...


Dr. Balu L. Parne SVNIT is presenting
Microsoft Whiteboard
2) There are no incoming
state and no outgoing transitions from the accept state
3) There are transition from start state to every other state and from every state to the accept state.
4) There is a transition between every pair of states that are not the start / accept state.
B127 RATHOD SHUBHAMKUMAR SVNIT has left the meeting
Dr. Balu L. Parne SVNIT
B081 ADITYA YADAV SV...
B109 CH ADITHYA SVNIT
B114 LELLAPALLI VIKAS ...
B135 Shivam Mishra SVN...
B098 Neelagiri Vijay
B121 AJAY KANHERKAR ...
38 others
You
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