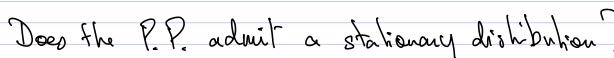
Ruk: last lecture (typo Q = /-1, 9/1 9/1. --9721-12 We defined the intensity making is stationary => TT ex: Porssen process of intensity ? (For a P.P. of intensity), No = 1, = = 10 = 0 > 90, =



Does the P.P. admit a stationary dishibution?

If it admits a stationary dishibution IT,

then IIQ=

$$(T_0,T_0,\dots,)$$

$$= \left(\begin{array}{c} 0 & 0 & \cdots & \\ \end{array} \right)$$

So TT cannot be a distribution, so there is no stationary distribution

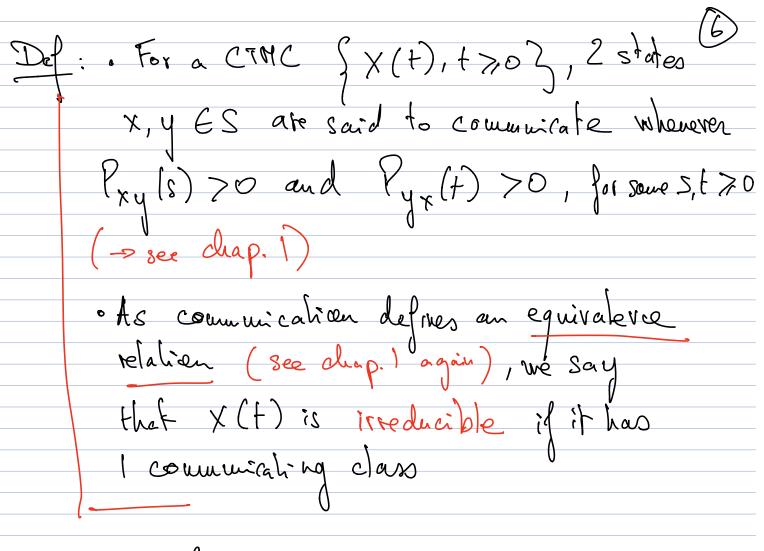
elf Er; is finite, then we have found the stationary distribution

 $T_0 = \frac{1}{1 + \leq r_i} \quad \text{and} \quad T_0 = \frac{r_0}{1 + \leq r_i}$ $for \quad n \geq 1$

Application (exercise): study the exist-co of the stationary dishibution for particular cases of the B-D process son in closes -

II. Applications & Roversibility

- As in Chap. I, the stationary distribution is bey to study limiting behaviour properties (also, the study simplifies when the chair is time reversible)
- 1) Interpretation of limiting probabilities



Thu: Let (X(t), t > 03 be an isreducible

CTMC and let's consider

Ly = lim / S 1 X (8) do

= Arerage fraction of time spent in state y
in the long run (as t > + 10)

Then we have the following alternative

1) There is no stationary distribution and Ly=0

2) There is a unique stationary distribution and Ly= Thy

