Remarks : Very 60 Non-deterministic Finite Automata Section 1.2 interesting Section 1.3 Regular Expressions Applications Section K.y Non-regular languages in the Myhill-Norede theorem Use $\overline{}$ Lost week ; = { 0, 2, 4, 6, 8, 10, 12, --DIV_BY_Z Z = {c,..,a} OVE 1,3,5,7,9 1,3,5,7,9 9,000) 9 initial 246,80 24,6,8 $\tilde{i}_{j}\mathcal{F}$ 2ent C 2, 4,6,8,0 Saw O É initial state Q leading of accepting (final) state 5 rejecting of the

 $\sum = \{c, b\}, L = \{5\}$ ab is a substring of 2 Ginter 9ser m c g scw al () c, L h Say ON-BY-2 Les DFA NV-BY-3 Les DFA DIV_BY_6 ...? LINLZ transition foretion = {C, 6, 12, 18, ... } $L_{1} \quad \text{OFA} = (Q, \Sigma, \delta, q_{0}, F) = M,$ L_2 DFA = $(Q', \Sigma, F', q', F') = M_2$ Can we run My and My in percellel ? Marhod : input string (, T2 (3 ---mi, qo q q q M_2 : $q_0' q' q' q'$ etc.

So "merge states" Q={ q0, q, 19-1,.. $Q \times Q'$ (90,90)) Q'= {qo,qi, --(90, q'), (q, q')meetine for ab is substry, E={a,b,c} gintent (Iser ma g sen as с, <u>,</u> , с m С) b, c machine is there at least one (a, 6,c С E Gihitral Mz scw c 0a,5 26 $\mathbb{Q}^{\prime} \times \mathbb{Q}$ (Initial (quint, quinit (gsee an a, qinit С (, Rc q'scw c (gmit, grand GinAdial grow ab g see on a q is final for M, is final if LIL (9, 2)If q' " " " Mz q is final OR q'is (q,q) is final if LIUL2 If Evel in M2 Í-LILZ or LZNLI

Here is what leads to Section 1, 2 (non-otterminism) If L is a language over E, [* = { S, S2 ... Sk | S1, ..., Sk E } (ruh, uh) = { E, ruh, uh, ruhuh, ruhuh, uhuh, ---} (languje) = (hav te parre) If L is regular, then so is LK. hes a DFA has a DFA Exemple $\left[a^{5},a^{7}\right]^{\ddagger}$ $\Sigma = \left\{a^{5} = aaaca, etc.\right\}$ $\left\{ q^{5}, c^{2} \right\} \rightarrow 0 \xrightarrow{a} \left\{ q_{1} \xrightarrow{a} \left\{ q_{2} \xrightarrow{a} \left\{ q_{3} \xrightarrow{a} \left\{ q_{4} \right\} \right\} \right\}$ Is regula \sim $(23) \leftarrow (23)$ What is fa5, a7 {= { = { , a5, a7, a', a', not a a', a's $\alpha^{22}, \alpha^{23}, \alpha^{24} \in \left\{\alpha^{5}, \alpha^{7}\right\}^{k} = \sum_{i=1}^{N}$ $G^{23} \in \{G^{5}, G^{7}\}^{\ddagger} \leftarrow nen-trivial$ $a^{24}, a^{25}, \dots \in \{a^5, a^7\}^{k}$