

Sous Structure	s	$\mathbb{E}_n(N_s)$
Extrémités	$t5 \ t3$	$\sqrt{5} - 1 + O(\frac{1}{n})$
Echelle	$a \ b$	$\frac{(5-\sqrt{5})n}{5} - \frac{3+2\sqrt{5}}{10} + O(\frac{1}{n})$
Renflement	c	$\frac{(25-11\sqrt{5})n}{5} + \frac{\sqrt{5}-1}{20} + O(\frac{1}{n})$
Boucle Interne	d	$\frac{2(9\sqrt{5}-20)n}{5} + \frac{53-23\sqrt{5}}{20} + O(\frac{1}{n})$
Boucle	e	$\frac{(3\sqrt{5}-5)n}{10} + \frac{\sqrt{5}+9}{20} + O(\frac{1}{n})$
MultiBoucle	f	$\frac{(7-3\sqrt{5})n}{2} - \frac{7-\sqrt{5}}{4} + O(\frac{1}{n})$

Sous Structure	Nombre	Taille
Echelle	$(\sqrt{5} - 2)n - \frac{9\sqrt{5}-23}{8} + O(\frac{1}{n})$	$\frac{5+3\sqrt{5}}{5} + O(\frac{1}{n})$
Boucle	$\frac{5-2\sqrt{5}}{5}n - \frac{3\sqrt{5}-13}{20} + O(\frac{1}{n})$	$\frac{1+\sqrt{5}}{2} + O(\frac{1}{n})$
Renflement	$\frac{18\sqrt{5}-40}{5}n + \frac{57\sqrt{5}-127}{20} + O(\frac{1}{n})$	$\frac{1+\sqrt{5}}{2} + O(\frac{1}{n})$
Boucle Interne	$\frac{65-29\sqrt{5}}{10}n + \frac{63-28\sqrt{5}}{20} + O(\frac{1}{n})$	$1 + \sqrt{5} + O(\frac{1}{n})$
MultiBoucle	$\frac{7\sqrt{5}-15}{10}n + \frac{69\sqrt{5}-129}{160} + O(\frac{1}{n})$	$\sqrt{5} + O(\frac{1}{n})$
Remplissage MultiBoucle	$\frac{5+\sqrt{5}}{2} + O(\frac{1}{n})$	$\frac{\sqrt{5}-1}{2} + O(\frac{1}{n})$

Sous Structure	<i>MinBoucle</i> = 0	<i>MinBoucle</i> = 1	<i>MinBoucle</i> = 2
Echelle	66,66%	55,27%	50%
Renflement	5,55%	8,06%	10,35%
Boucle Interne	2,77%	4,98%	7,32%
Boucle	8,33%	17,08%	19,82%
MultiBoucle	16,66%	14,58%	12,5%

Règne:CS	NB	#Bases	%E	%R	%B	%BI	%MB
Archae 5s	1	123	61,79	3,25	13,82	10,57	4,88
16s	18	1486	60,06	4,24	11,85	9,84	12,87
23s	12	2946	56,20	3,03	13,25	13,78	13,34
Bacteria 5s	24	120	64,16	2,49	13,95	9,32	7,49
16s	231	1531	58,97	4,35	11,59	10,88	12,70
23s	100	3325	49,28	2,48	11,80	11,43	24,74
Eucaryotes 5s	1	119	62,18	1,68	13,45	15,97	5,04
16s	38	1648	52,93	4,09	12,26	11,31	18,43
23s	56	2261	50,56	2,82	16,94	11,06	18,01
Théorique	-	∞	55,27	8,06	17,08	4,98	14,58

Règne:CS	NB	#Bases	E	R	B	IL	ML	Ins/ML
Archae 5s	1	123	9,50	1,33	8,50	6,50	6,00	3,00
16s	18	1486	9,45	2,62	5,87	5,75	9,11	2,81
23s	12	2946	8,16	1,93	5,59	7,53	11,79	4,05
Bacteria 5s	24	120	10,90	1,49	8,42	5,43	9,04	3,00
16s	231	1531	8,71	2,35	5,72	5,92	8,82	2,82
23s	100	3325	8,25	1,98	5,72	6,82	25,41	4,09
Eucaryotes 5s	1	119	12,33	2,00	8,00	9,50	6,00	3,00
16s	38	1648	8,80	2,52	6,98	6,70	14,46	2,77
23s	56	2261	8,21	2,12	7,31	7,71	14,44	3,19
Théorique	-	∞	2,34	1,62	1,62	3,24	2,23	3,62

$$\mathcal{L} \in \{s_1, \dots, s_k\}, \omega \in \mathcal{L}$$

$$s_1 \rightarrow \pi_{s_1}$$

$$\vdots$$

$$s_k \rightarrow \pi_{s_k}$$

$$\pi(\omega) = \pi_{s_1}^{|\omega|_{s_1}} \pi_{s_2}^{|\omega|_{s_2}} \dots \pi_{s_k}^{|\omega|_{s_k}}$$

$$\pi_a = \delta$$

$$\pi_b = 1$$

$$\pi_c = 1$$

$$\mu_a := \mathbb{E}(\#a) = \sum_{\omega \in \mathcal{L}} |\omega|_a p(\omega)$$

$$\mu_a = \sum_{\omega \in \mathcal{L}} |\omega|_a \frac{\pi(\omega)}{\pi(\mathcal{L})}$$

$$\mu_a = \frac{4\delta^2 + 6\delta}{2\delta^2 + 6\delta + 1}$$

$$\delta = \frac{6 - 6\mu_a - 2\sqrt{7\mu_a^2 - 14\mu_a + 9}}{4\mu_a - 8}$$

$$\mathbb{E}(\#a) = 2/3 \Rightarrow \delta = 1/4$$

$$\mathbb{E}(\#a) = 4/3 \Rightarrow \delta = 2$$

$$\mathcal{L}_n \quad n$$

$$G = (S, N, T, \delta) \quad N = \{N_1, \dots, N_k\} \quad T = \{s_1, \dots, s_m\}$$

$$N_1 \rightarrow f_1$$

$$\vdots$$

$$N_k \rightarrow f_k$$

$$s_1 \rightarrow zx_1$$

$$\vdots$$

$$s_m \rightarrow zx_m$$

$$\begin{aligned}
& \Psi = \left(\frac{\partial \psi_i(z, x_1, \dots, x_m, f_1, \dots, f_k)}{\partial f_j} \right)_{0 \leq i, j \leq k} \\
\delta \Rightarrow & \begin{cases} f_1(z, x_1, \dots, x_m) = \psi_1(z, x_1, \dots, x_m, f_1, \dots, f_k) \\ \vdots \\ f_k(z, x_1, \dots, x_m) = \psi_k(z, x_1, \dots, x_m, f_1, \dots, f_k) \end{cases} \\
& \begin{cases} f_1(z, x_1, \dots, x_m) = \psi_1(z, x_1, \dots, x_m, f_1, \dots, f_k) \\ \vdots \\ f_k(z, x_1, \dots, x_m) = \psi_k(z, x_1, \dots, x_m, f_1, \dots, f_k) \\ 0 = \det(I - \Psi) \end{cases} \\
& (y_1, \dots, y_k, z) \\
\Rightarrow \mathbb{E}(\#s_i) = & -\frac{n}{z(1, \dots, 1)} \frac{\partial z(x_1, \dots, x_m)}{\partial x_i} (1, \dots, 1)
\end{aligned}$$