1 Preliminaries

- p. 28 (if p. 27 or p. 28): Insert ‘provided the automaton is complete’ after ‘The matrix $M/k$ is stochastic’.
- p. 30. Replace lines 3–17 by:

Applying by induction the theorem to $U$ and $W$, we obtain nonnegative eigenvectors $u$ and $w$ for the eigenvalues $\rho_U$ and $\rho_W$ of $U$ and $W$. We prove that $\max(\rho_U, \rho_W)$ is an eigenvalue of $M$ with some nonnegative eigenvector.

If $\rho_U \geq \rho_W$, then $\rho_U$ is an eigenvalue of $M$ with the corresponding eigenvector $[u]$. If $\rho_U < \rho_W$, then we show that $\rho_W$ is an eigenvalue of $M$ for the eigenvector $[w']$, where

$$u' = \left( \sum_{n \geq 0} U^n \rho_W^{-n-1} \right) w = (\rho_W I - U)^{-1} V w.$$  

Since $\rho_U < \rho_W$, the series $\sum_{n \geq 0} U^n \rho_W^{-n}$ converges in view of Proposition 1.9.3, and it converges to a matrix with nonnegative coefficients because each $U^n$ has nonnegative coefficients. If follows that $u'$ has nonnegative coefficients. Moreover

$$V w = (\rho_W I - U)w' = \rho_W u' - U u',$$

showing that $M[w'] = \rho_W [w']$. This shows that $\rho_M \geq \max(\rho_U, \rho_W)$.

Conversely, if $\lambda$ is an eigenvalue of $M$ with corresponding eigenvector $[w]$, then $\lambda$ is an eigenvalue of $W$ if $v \neq 0$, and is an eigenvalue of $U$ if $v = 0$. This proves that $\rho_M = \max(\rho_U, \rho_W)$.

- p. 31, 12–13 replace by: Recall that the adjacency matrix of a complete deterministic automaton over a $k$-letter alphabet has spectral radius $k$ and...

- p. 37 (if p. 36): Remove the last ‘x’.
2 Codes

- p. 74 ℓ. 16 : Insert ‘\( p q t^2 F_{D_n}(t) \)' after ‘\( F_a(t) F_{D_a}(t) F_b(t) \)’
- p. 102 ℓ. 3 of Exercise 2.4.2 : Replace ‘prefix of \( w \)’ by ‘prefix \( u \) of \( w \)’
- p. 102 In Exercise 2.4.3, replace the second sentence by: Let \( D = D_n \) be the Dyck code on \( A \) (Example 2.2.12). Show that one has
  \[
  f_{D}(t) = \frac{n}{2n - 1} (1 - \sqrt{1 - 4(2n - 1)t^2}),
  \]
  \[
  f_{D^*}(t) = \frac{1 - n + n\sqrt{1 - 4(2n - 1)t^2}}{1 - 4n^2t^2}.
  \]

3 Prefix codes

- p. 114 Figure 3.8(b) : Replace the label ‘\( a \)’ by ‘\( b \)’ on the last edge of the path of length 3.
- p. 117 ℓ. -8 : Replace ‘minimal automata’ by ‘minimal automaton’
- p. 157 ℓ. -7 : Replace ‘\( B \)’ by ‘\( B \) of the proof of Lemma 3.8.6’
- p. 173 Exercise 3.8.2 ℓ. 1 : Add ‘s’ to ‘length’
- p. 173 Exercise 3.8.2 ℓ. 3 : Insert ‘3.8.1 and’ before ‘3.6.4’
- p. 173 add the following exercise, due to Staiger (2007). It shows that for a any infinite prefix code, there is a maximal prefix code on the same alphabet which has the same length distribution.
  Exercise 3.8.3 Let \( X \) be an infinite prefix code. Let \( x_1, x_2, \ldots \) be an enumeration of \( X \) by nondecreasing lengths. Set \( \ell_n = |x_n| \). Let \( X_1 \subset X_2 \subset \cdot \cdot \cdot \) be the strictly increasing sequence of prefix codes defined as follows.
  Set \( X_1 = \emptyset \). Assume that \( X_n \) is already defined and define \( X_{n+1} \) as follows.
  Set \( m = \text{Card}(X_n) \) and \( \ell = \ell_{m+1} \). Let \( \{u_1, \ldots, u_t\} \) be the set of words of length \( \ell \) without any prefix in \( X_n \). For \( 1 \leq i \leq t \), let \( v_i \) be a word such that \( u_iv_i \) has length \( \ell_{m+1} \). Then \( X_{n+1} = X_n \cup \{u_1v_1, \ldots, u_tv_t\} \).
  Let \( X' \) be the union of the \( X_n \). Show that:
  1. the length distribution of \( X \) and \( X' \) are the same.
  2. the set \( X' \) is a maximal prefix code.

4 Automata

- p. 194 Example 4.3.5 : ‘the code \( X = \)' instead of ‘the code \( C = \)’

5 Deciphering delay

- p. 214 ℓ. 15 : Insert ‘with \( a \in A \)’ at the beginning of the line
- p. 221 Add the following exercise which is a result from Simon (1990).
  Exercise. A rectangular band is a semigroup of the form \( I \times \Lambda \) for two sets \( I, \Lambda \) with the multiplication
  \[
  (i, \lambda)(j, \mu) = (i, \mu)
  \]
  for \( i, j \in I \) and \( \lambda, \mu \in \Lambda \).
Let \( f : A^+ \rightarrow S \) be a morphism from \( A^+ \) onto a rectangular band. Show that for any \( s \in S \), the semigroup \( f^{-1}(s) \) is of the form \( X^+ \) where \( X \) is a code with verbal deciphering 1.

Solution. Assume that \( xyu = x'y' \) with \( x, x', y, y' \in X^+ \) and \( u \in A^+ \). Assume that \( x = x'v \). Then \( y' = vyu \) implies \( f(v)Rf(y') = s \) and \( x = x'v \) implies \( f(v)Lf(x) = s \). Thus \( f(v) = s \) which implies \( v \in X^+ \). This shows that \( x = x' \).

6 Bifix codes

- p. 227 \( \ell \). 11 : ‘Proposition’ instead of ‘Theorem’
- p. 229 \( \ell \). 9 : ‘any parse of \( v' \) instead of ‘any parse of \( u' \)
- p. 230 \( \ell \). 2 : Replace ‘Theorem 3.1.6’ by ‘Proposition 3.1.3’, and insert ‘by Proposition 3.1.6’ before ‘1 – X’.
- p. 232 \( \ell \). 5 : ‘for \( k = 0, 1 \)’ instead of ‘for \( k = 0, 1, 2 \)

7 Circular codes

- p. 297 Add the following exercises for Section 7.1.

Exercise 7.1.3

Let \( B_n \) be an alphabet with \( n \) elements and let \( \bar{B}_n = \{ b \mid b \in B_n \} \). Let \( A_n = B_n \cup \bar{B}_n \). Consider the congruence \( \equiv \) of \( A_n^* \) generated by all the relations \( bb \equiv 1 \) for \( b \in B_n \). Let \( M \) be the corresponding quotient monoid and let \( \varphi : A^+ \rightarrow M \) be the corresponding morphism. The set \( \varphi^{-1}(1) \)

Identify \( M \) and \( R \). Show that an element \( w \in R \) is right-invertible (resp. left-invertible) if and only if \( w \in B_n^* \) (resp. \( w \in \bar{B}_n^* \). Deduce that if \( uv, vu \in D_n^* \), then \( u, v \in D_n^* \). Conclude that \( D_n^* \) is a circular code.

Solution. By induction on the length of \( u \in R \). If \( uv \equiv 1 \) for some \( v \in R \), we have \( u = u'b \) and \( v = bv' \) with \( b \in B \) and \( u'v' \equiv 1 \). By induction \( u' \in B^* \). Thus \( u \in B^* \).

Exercise 7.1.4 Let \( D_n^* \) be the restricted Dyck code as above. Show that one has the following disjoint union.

\[
D_n^* \setminus \{ 1 \} = \bigcup_{b \in B} bD_n^*bD_n^*.
\]

Let \( g_n(t) \) (resp. \( h_n(t) \)) be the generating series of \( D_n^* \) (resp. \( D_n' \)). Show that \( g_n(t) = (1 - h_n(t))^{-1} \) and that \( g_n(t) = 1 + nt^2g_n(t)^2 \). Deduce that \( g_n(t) = (1 - \sqrt{1 - 4nt^2})/2nt^2 \) and that \( h_n(t) = (1 - \sqrt{1 - 4nt^2})/2t \). Note
that the value \( h_1(t) = (1 - \sqrt{1 - 4t^2})/2 \) is consistent with the value given for \( F_{D_a}(t) = h_1(t/2) \) for \( p = q = 1/2 \) in Example 2.4.10.

Using the binomial formula, as in the derivation of Equation (3.13), show that 
\[
g_n(t) = \sum_{k \geq 0} C_k n^k t^{2k},
\]
where 
\[
C_k = \frac{1}{k+1} \binom{2k}{k}
\]
is the \( k \)-th Catalan number (see Table 3.1 p. 129). Thus
\[
g_1(t) = 1 + t^2 + 2t^4 + 5t^6 + 14t^8 + 42t^{10} + 132t^{12} + \ldots, \\
g_2(t) = 1 + 2t^2 + 8t^4 + 40t^6 + 224t^8 + 1344t^{10} + 8448t^{12} + \ldots
\]
In particular, 
\[
g_1(t) = \sum_{k \geq 0} C_k n^k t^{2k}
\]
and 
\[
C_k
\]
is the number of words of length \( 2k \) in \( D_1^* \). Give a direct bijection between the set of words of length \( 2k \) in \( D_1^* \) and the Cartesian product of the set of words of length \( 2k \) in \( B_k^* \).

Solution. The words in \( D_1^* \) may classically viewed as well-parenthesized expressions, with \( n \) different types of parenthesis; each such word, of length \( 2k \), defines a unique word of length \( 2k \) in \( D_1^* \), by matching the opening and closing parenthesis; the sequence of length \( k \) of opening parenthesis, from left to right, defines a word of length \( k \) in \( B_k^* \). This gives the desired bijection. The various Dyck and restricted Dyck codes are described in more detail in (Berstel, 1979).

• p. 298 Add the following exercise for Section 7.3 (see Stanley, 1997).

Exercise 7.3.6 Let \( X \) be a circular code. For \( x \in X \) and \( n \geq 0 \), let \( g_{x,n} \) be the number of words of length \( n \) having an interpretation \((s, y, p)\) with \( x = ps \) and \( p \) nonempty. Show that
\[
g_{x,n} = |x| \text{Card}(X^* \cap A^{n-|x|})
\]
Deduce from this equality a direct proof of Equation (7.14).

Solution. Let \( S \) be the set of words having a conjugate in \( X^* \). Set \( u_n^* = \text{Card}(X^* \cap A^n) \) and \( u^*(z) = \sum_{n \geq 0} u_n z^n \). Since \( X \) is circular, any word in \( S \) has a unique interpretation \((s, y, p)\) such that \( ps \in X \) and \( p \) nonempty. Thus 
\[
g_{x,n} = |x| u_n^* - |x|
\]
which proves (1). Since 
\[
p_n = \sum_{x \in X} g_{n,x},
\]
we obtain
\[
p_n = \sum_{x \in X} g_{n,x} = \sum_{x \in X} |x| u_n^* - |x|
\]
\[
= \sum_{m=0}^{n} m u_m u_{n-m}^*.
\]
This shows that 
\[
p(z) = zu'(z)u^*(z)\]
whence Formula (7.14).

8 Factorizations of free monoids

The aim of this exercise is to generalize the notion of bisection.

Exercise 8.2.11 Let \( F \) be a factorial set. A bisection of \( F \) is a pair \((X, Y)\) of subsets of \( F \) such that 
\[
F = X^* Y^*.
\]
(i) Show that

\[ Y^*X^* \cap F \subset X^* \cup Y^* \]

(ii) Show that \( X \) is \((1,0)\)-limited and \( Y \) is \((0,1)\)-limited.

Solution: (i) It is enough to show that \( YX \cap F \subset X \cup Y \). From \( F = X^*Y^* \), we deduce \( F^{-1} = 1 - X - Y + YX \). Since \( F \) is factorial, we have \((F^{-1}, w) = 0\) for any word \( w \in F \) of length at least 2. This implies the conclusion.

(ii) Assume that \( uw \in X^* \). Then \( u, v \in F \) implies \( u = xy, v = x'y' \) for some \( x, x' \in X^* \) and \( y, y' \in Y^* \). By (i), we have \( yx' \in X^* \cup Y^* \). By uniqueness of the factorization, we have \( yx' \in X^* \) and \( y' = 1 \). Thus \( v \in X^* \).

The following exercise is from Keller (1991) and Béal and Dima (2015)

**Exercise 8.2.12** Let \( D \) be the one-sided Dyck code on the alphabet \( A \cup \bar{A} \). It is the class of 1 for the congruence generated by the relations \( a\bar{a} = 1 \) for \( a \in A \).

(i) Show that \( (D^* \bar{A}, D \cup A) \) is a bisection of \( F \).

(Hint: show that a reduced word with respect to the rules rewriting any \( a\bar{a} \) into 1 for \( a \in A \) is in \( A^*\bar{A}^* \).

(ii) Let \( f(t) \) be the generating series of \( F \). Show that

\[
f(t) = \frac{1 + \sqrt{1 - 4nt^2}}{(1 - 2nt + \sqrt{1 - 4nt^2})^2}
\]

with \( n = \text{Card}(A) \).

(iii) Show that the radius of convergence of the generating series of \( F \) is \( \frac{1}{n+1} \).

Solution: (i) Let \( \varphi : (A \cup \bar{A})^* \to \mathbb{Z} \) be the morphism defined by \( \varphi(a) = 1 \) if \( a \in A \) and \( \varphi(a) = -1 \) if \( a \in \bar{A} \). For \( w \in F \), set \( w = uv \) where \( u \) is the shortest prefix of \( w \) such that \( \varphi(u') \geq \varphi(u) \) for any prefix of \( u \). Then \( u \in (D^* \bar{A})^* \) and \( v \in (D \cup A)^* \).

(ii) Let \( g(t), h(t) \) be the generating series of \( D^* \bar{A}, D \cup A \). By Exercise 2, we have \( g(t) = (1 - \sqrt{1 - 4t^2})/2nt^2 \) and \( h(t) = (1 - \sqrt{1 - 4t^2})/2 \). Since, by (i),

\[
f(t) = \frac{1}{(1 - ntg(t))(1 - nt - h(t))} = \frac{1 - h(t)}{(1 - nt - h(t))^2}
\]

the result follows.

(iii) The value \( \rho = \frac{1}{n+1} \) is solution of \( 1 - n\rho - h(\rho) = 0 \) and is thus a pole of \( f \). The other singularity of \( f \) is the value \( t = 1/2\sqrt{n} \) for which \( \sqrt{1 - 4nt^2} = 0 \). For \( n \geq 1 \), we have \( \frac{1}{n+1} \leq \frac{1}{2\sqrt{n}} \) and thus \( \frac{1}{n+1} \) is the radius of convergence of \( f \).

**Exercise 8.2.13** Show that \( D \cup A \) is a circular code (this implies that \( D \) itself is a circular code, see Exercise 7.1.3 in this fascicule).

Solution: This follows from Exercise 8.2.12 and 8.2.11.
Exercise 8.2.14  Show that any factor of $D^*$ has a conjugate in $(D^*\bar{A})^*$ or in $(D \cup A)^*$.

Solution: Set $X = D^*\bar{A}$ and $Y = D \cup A$. By Exercise 8.2.12, the pair $(X,Y)$ is a bisection of the set $F$ of factors of $D$. Thus the statement follows from Exercise 8.2.11 (i).

10 Synchronization
- p. 395 Section 10.6 Notes: Insert ‘The notion of constant appears in Schützenberger (1975). The notion of synchronizing word appears in many contexts with various denominations, including magic word (Lind, Marcus (1995)) or reset sequence. It has been defined in Chapter 3 for prefix codes and for deterministic automata. The notion of synchronizing pair is an extension of the definition of synchronizing word to codes which are not prefix. It is due to Schützenberger (1979b).’
- p. 395 Section 10.6 Notes ℓ. 3: Insert before ‘However’ the sentence ‘This is Theorem 10.2.11.’

11 Groups of codes
- p. 401 Delete ‘It is not known ...thin maximal codes’.
- p. 412 ℓ 5 Replace ‘Example 3.6.6’ by ‘Example 3.6.3’
- p. 415 Remark 11.4.5, ℓ. 3: Insert a space between ‘X’ and ‘is’
- p. 433 It has been shown by Yun Liu (2012) that the generalization of Proposition 11.1.6 for a code which is not prefix is false. Proposition 11.2.3 already appears as Property 2 in Schützenberger (1964) with the hypothesis that $G(X)$ is abelian. It has been shown in Liu (2012) that the corresponding statement for a code which is not prefix is false.

13 Densities
- p. 452, ℓ. 1: Replace the first paragraph by:
  A real valued function $\mu$ defined on a Boolean algebra of sets $\mathcal{F}$ is additive if for any disjoint sets $E, F \in \mathcal{F}$, one has $\mu(E \cup F) = \mu(E) + \mu(F)$. It is called countably additive if
  \[
  \mu(\bigcup_{n \geq 0} E_n) = \sum_{n \geq 0} \mu(E_n)
  \]
  for any sequence $(E_n)_{n \geq 0}$ of pairwise disjoint sets in $\mathcal{F}$ such that $\bigcup_{n \geq 0} E_n \in \mathcal{F}$. If $\mu$ is additive and takes nonnegative values, then it is monotone in the sense that if $E \subset F$ for $E, F \in \mathcal{F}$, then $\mu(E) \leq \mu(F)$ since indeed $\mu(F) = \mu(E \cup (F \setminus E)) = \mu(E) + \mu(F \setminus E) \geq \mu(E)$.
- p. 452, ℓ. 8: Replace Proposition 13.1.3 by:
  Let $\mu$ be a countably additive function defined on a Boolean algebra $\mathcal{F}$ of sets. Then
  \[
  \mu(\bigcup_{n \geq 0} E_n) \leq \sum_{n \geq 0} \mu(E_n)
  \]
for any sequence \((E_n)_{n \geq 0}\) of sets in \(F\) such that \(\bigcup_{n \geq 0} E_n \in F\).

- p. 456: Replace Proposition 13.1.13 by:
  
  The function \(\mu\) satisfies \(\mu(A^n) = 1\) and is countably additive.

- p. 457 \(\ell.\) 8: Add ‘The second inequality holds by Proposition 13.1.3 since, by Lemma 13.1.12, \(F\) is a Boolean algebra.’

- p. 457 \(\ell.\) 10: Replace the sentence by: A function \(\nu\) defined on a family of sets \(F\) is called \textit{countably subadditive} if for any sequence \((E_n)_{n \geq 0}\) of sets in \(F\) such that \(\bigcup_{n \geq 0} E_n \in F\), one has \(\nu(\bigcup_{n \geq 0} E_n) \leq \sum_{n \geq 0} \nu(E_n)\).

- p. 459 \(\ell.\) 15: Replace ‘Then Equation (13.1) holds’ by ‘Then the equation of line 6 holds’

- p. 495 proof of Proposition 14.1.2, \(\ell.\) 1: Replace ‘Let \(X, Y\)’ by ‘Let \(X, Z\)

**14 Polynomials of finite codes**

- p. 525, \(\ell.\) -6: Replace ‘\(\tau m = \tau m + \tau'm\)’ by ‘\(\sigma m = \tau m + \tau'm\)’

- p. 526 Example 14.7.3: The matrices \(\alpha\) and \(\beta\) should be

\[
\alpha = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & -1 & 1 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 1 & 1 & 0 \end{bmatrix}, \quad \beta = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & -1 \\ 0 & -1 & 1 & -2 \\ 0 & -1 & 1 & -2 \end{bmatrix}.
\]

- p. 534 Add to the Notes: The argument of the proof of Theorem 14.7.5 is well-known in group representation theory. The map from \(V\) to \(Ve\) is called in Green (2007) the \textit{Schur functor}. Theorem 14.7.5 itself has been generalized in Perrin (2013). The statement holds replacing the submonoid generated by a bifix code by a set \(S\) such that the minimal automata of \(S\) and of its reversal are strongly connected.

**Solution of exercises**

- p. 543 Solution 3.6.5: \(\ell.\) 1, replace ‘Let \(w \in A^*\) be such that’ by ‘Let \(u \in Z^*\) and \(w \in A^*\) be such that’

\(\ell.\) -1, replace ‘We have shown that \(w \in U\)’ by ‘We have shown that \(u \in U\).

- p. 544 Solution 3.8.1: \(\ell.\) 3 of p. 544: Replace ‘\(v_{n+p} = v_n k^p - \sum_{i=1}^{n} u_{n+i} k^{p-i}\)’ by ‘\(v_n = k^p - \sum_{i=1}^{n} u_{n-i} k^i\),’ and insert \(\ell.\) 4, before ‘Using’ the sentence ‘It implies that \(v_{n+p} = v_n k^p - \sum_{i=1}^{p} u_{n+i} k^{p-i}\).’

- p. 552 Solution 6.1.2: replace lines 5–9 by

‘Next, if (ii) holds, consider \(x \in H \cap A^*\). Then \(x = h_1^{\epsilon_1} h_2^{\epsilon_2} \cdots h_\ell^{\epsilon_\ell}\) with \(n \geq 0, h_i \in X\) and \(\epsilon_i = \pm 1\). We may assume that \(n\) is chosen minimal. Assume that \(\epsilon_i = -1\) for some index \(i\). Since \(X\) is bifix, none of the \(h_i^{-1}\) can cancel completely with \(h_{i-1}\) or with \(h_{i+1}\). Since \(x \in A^*\), there exists an index \(i\) with \(1 \leq i \leq n\) such that \(\epsilon_i = -1\) and \(h_i^{-1}\) cancels with its neighbors, that is \(h_{i-1}^{-1} h_i^{-1} h_{i+1}^{-1} \in A^*\). Thus, we have \(\epsilon_{i-1} = 1, \epsilon_{i+1} = 1, h_{i-1} = tv, h_i = vu, h_{i+1} = vw\) for \(t, u, v, w \in A^*\). But then \(h_{i-1}^{-1} h_i^{-1} h_{i+1} = tw\) is in \(X\) by (ii). This contradicts the minimality of \(n\). This shows that \(\epsilon_i = 1\) for all \(i\) and thus \(x \in X^*\). Thus (iii) holds.’
Let \( u = u_s \cdots u_1 \) and \( v = v_1 \cdots v_t \). We have \( |u| \leq (s-1)n(n-1)/2 \) and \( |v| \leq (t-1)n(n-1)/2 \). Thus

\[
|uv| \leq (s+t-2)n(n-1)/2. \tag{2}
\]

Let \( z \in A^* \) be such that \( q_t \xrightarrow{z} p_s \) with \( |z| \leq n-1 \). Since \( p_s \xrightarrow{u} p_1 \) and \( q_1 \xrightarrow{v} q_t \), we have \( q_1 \xrightarrow{vz} p_1 \). This forces \( x_s y_t = 1 \) by unambiguity.

Since \( x_s y_t = 1 \), we have

\[
s + t \leq \sum_{q \in Q} (x_s)_q + \sum_{q \in Q} (y_t)_q \leq n + 1. \tag{3}
\]

Since the minimal rank of the elements of \( M \) is 1, the minimal number of nonzero distinct rows of an element of \( M \) is 1. By Exercise 9.3.5, \( y_t \) is a column of an element of the monoid \( M = \varphi(A^*) \) with minimal number of nonzero distinct rows. Such an element has the form \( m = y_t \ell \) where \( \ell \) is a row vector. Similarly, \( x_s \) is a row of an element of \( M \) of the form \( n = r x_s \) where \( r \) is a column vector. Since the minimal rank of the words in \( A \) is 1, we cannot have \( \ell r = 0 \) which would imply that \( 0 \in M \). Since \( A \) is unambiguous, this forces \( \ell r = 1 \) and thus \( mn = y_t x_s \). This shows that \( y_t x_s \in M \).

The word \( w = vzuz \) is such that \( y_t x_s \leq \varphi(w) \). Since \( y_t x_s \in M \), by Exercise 9.3.12, this implies \( y_t x_s = \varphi(w) \). Thus \( w \) has rank one and by Equations (2) and (3), \( |w| \leq (s+t-2)n(n-1) + n-1 \leq (n^2 - n + 2)(n-1)/2. \)

Appendix: Research problems

- p. 584 Solution 14.1.3 : insert ‘strict’ before ‘right contexts’ and ‘left contexts’

References

- p. 596 \( \ell \) -10 : Replace ‘Capoceli’ by ‘Capocelli’
Index
• p. 613 Add p. 102 for Dyck code.
• p. 616 ℓ. 5 : Replace ‘nil-simple semigroup 417’ by ‘nil-simple semigroup 416’

Additional references