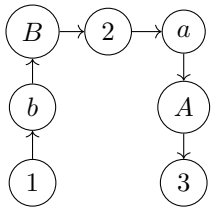
| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 0 | 1 | | | |
| 2 | 1 | -1 | | | |
| 3 | -1 | 0 | | | |
| a | 1 | 0 | 0 | -1 | 0 |
| b | 0 | 1 | -1 | 0 | 0 |

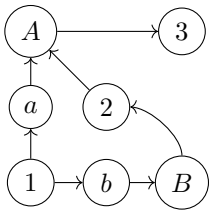
(a) Type I-I PFGAM




(b) Type I-I Graph

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 1 | | | |
| 2 | 1 | -1 | | | |
| 3 | -1 | 0 | | | |
| a | 1 | 0 | -1 | 0 | 0 |
| b | 0 | 1 | -1 | 0 | 0 |

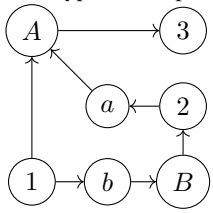
(c) Type I-IIA PFGAM




(d) Type I-IIA Graph

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 1 | | | |
| 2 | 1 | -1 | | | |
| 3 | -1 | 0 | | | |
| a | 1 | 0 | 0 | -1 | 0 |
| b | 0 | 1 | -1 | 0 | 0 |

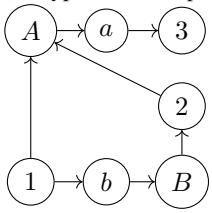
(e) Type I-IIB PFGAM




(f) Type I-IIB Graph

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 1 | | | |
| 2 | 1 | -1 | | | |
| 3 | -1 | 0 | | | |
| a | -1 | 0 | 0 | 0 | 1 |
| b | 0 | 1 | -1 | 0 | 0 |

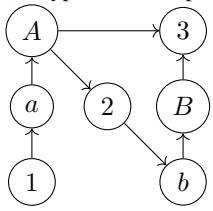
(g) Type I-IIC PFGAM




(h) Type I-IIC Graph

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 0 | | | |
| 2 | -1 | 1 | | | |
| 3 | -1 | -1 | | | |
| a | 1 | 0 | -1 | 0 | 0 |
| b | 0 | 1 | 0 | -1 | 0 |

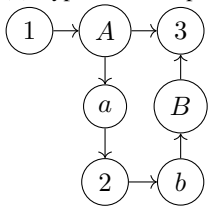
(i) Type I-IIIA PFGAM




(j) Type I-IIIA Graph

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 0 | | | |
| 2 | -1 | 1 | | | |
| 3 | -1 | -1 | | | |
| a | -1 | 0 | 0 | 1 | 0 |
| b | 0 | 1 | 0 | -1 | 0 |

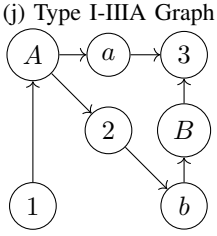
(k) Type I-IIIB PFGAM




(l) Type I-IIIB Graph

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 0 | | | |
| 2 | -1 | 1 | | | |
| 3 | -1 | -1 | | | |
| a | -1 | 0 | 0 | 0 | 1 |
| b | 0 | 1 | 0 | -1 | 0 |

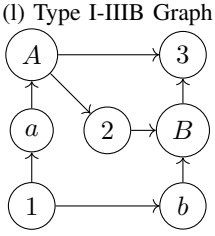
(m) Type I-IIIC PFGAM




(n) Type I-IIIC Graph

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 1 | | | |
| 2 | -1 | 1 | | | |
| 3 | -1 | -1 | | | |
| a | 1 | 0 | -1 | 0 | 0 |
| b | 0 | 1 | -1 | 0 | 0 |

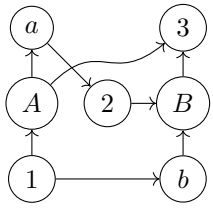
(o) Type IIA-IIIA PFGAM




(p) Type IIA-IIIA Graph

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 1 | | | |
| 2 | -1 | 1 | | | |
| 3 | -1 | -1 | | | |
| a | -1 | 0 | 0 | 1 | 0 |
| b | 0 | 1 | -1 | 0 | 0 |

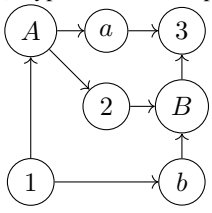
(q) Type IIB-IIIA PFGAM




(r) Type IIB-IIIA Graph

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 1 | | | |
| 2 | -1 | 1 | | | |
| 3 | -1 | -1 | | | |
| a | -1 | 0 | 0 | 0 | 1 |
| b | 0 | 1 | -1 | 0 | 0 |

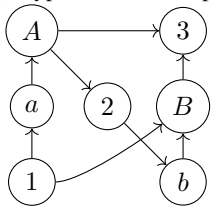
(s) Type IIC-IIIA PFGAM




(t) Type IIC-IIIA Graph

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 1 | | | |
| 2 | -1 | 1 | | | |
| 3 | -1 | -1 | | | |
| a | 1 | 0 | -1 | 0 | 0 |
| b | 0 | 1 | 0 | -1 | 0 |

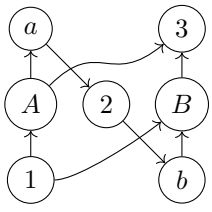
(u) Type IIA-IIIB PFGAM




(v) Type IIA-IIIB Graph

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 1 | | | |
| 2 | -1 | 1 | | | |
| 3 | -1 | -1 | | | |
| a | -1 | 0 | 0 | 1 | 0 |
| b | 0 | 1 | 0 | -1 | 0 |

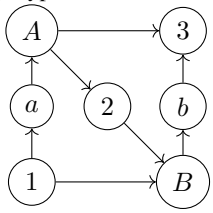
(w) Type IIB-IIIB PFGAM




(x) Type IIB-IIIB Graph

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 1 | | | |
| 2 | -1 | 1 | | | |
| 3 | -1 | -1 | | | |
| a | 1 | 0 | -1 | 0 | 0 |
| b | 0 | -1 | 0 | 0 | 1 |

(y) Type IIA-IIIC PFGAM

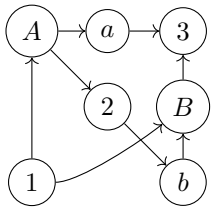



(z) Type IIA-IIIC Graph

Fig. 1: All possible configurations of TPSs with EB (Part A)

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 1 | | | |
| 2 | -1 | 1 | | | |
| 3 | -1 | -1 | | | |
| a | -1 | 0 | 0 | 0 | 1 |
| b | 0 | 1 | 0 | -1 | 0 |

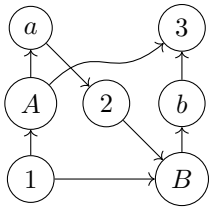
(a) Type IIC-IIIB PFGAM




(b) Type IIC-IIIB Graph

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 1 | | | |
| 2 | -1 | 1 | | | |
| 3 | -1 | -1 | | | |
| a | -1 | 0 | 0 | 1 | 0 |
| b | 0 | -1 | 0 | 0 | 1 |

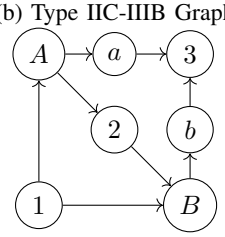
(c) Type IIB-IIIC PFGAM




(d) Type IIB-IIIC Graph

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 1 | | | |
| 2 | -1 | 1 | | | |
| 3 | -1 | -1 | | | |
| a | -1 | 0 | 0 | 0 | 1 |
| b | 0 | -1 | 0 | 0 | 1 |

(e) Type IIC-IIIC PFGAM

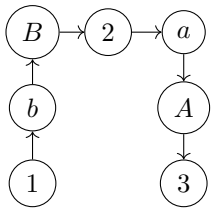



(f) Type IIB-III Graph

Fig. 2: All possible configurations of TPSs with EB (Part B)

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 0 | 1 | | | |
| 2 | 1 | -1 | | | |
| 3 | -1 | 0 | | | |
| a | 1 | 0 | 0 | -1 | 0 |
| b | 0 | 1 | -1 | 0 | 0 |

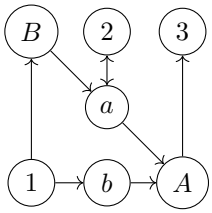
(a) Type I-I PFGAM




(b) Type I-I Graph

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 1 | | | |
| 2 | 1 | -1 | | | |
| 3 | -1 | 0 | | | |
| a | 1 | -1 | 0 | 10 | 0 |
| b | 1 | 0 | -1 | 0 | 0 |

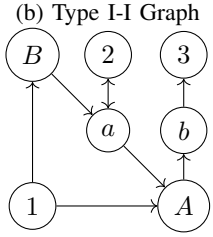
(c) Type I-IIA PFGAM




(d) Type I-IIA Graph

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 1 | | | |
| 2 | 1 | -1 | | | |
| 3 | -1 | 0 | | | |
| a | 1 | -1 | 0 | 10 | 0 |
| b | -1 | 0 | 0 | 0 | 1 |

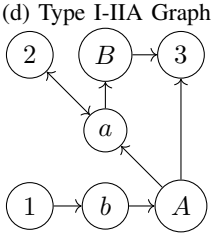
(e) Type I-IIB PFGAM




(f) Type I-IIB Graph

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 0 | | | |
| 2 | -1 | 1 | | | |
| 3 | -1 | -1 | | | |
| a | -1 | 1 | 0 | 10 | 0 |
| b | 1 | 0 | -1 | 0 | 0 |

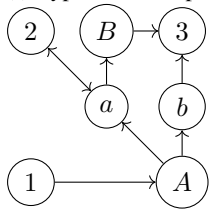
(g) Type I-IIIA PFGAM




(h) Type I-IIIA Graph

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 0 | | | |
| 2 | -1 | 1 | | | |
| 3 | -1 | -1 | | | |
| a | -1 | 1 | 0 | 10 | 0 |
| b | -1 | 0 | 0 | 0 | 1 |

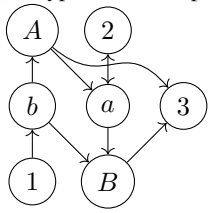
(i) Type I-IIIB PFGAM




(j) Type I-IIIB Graph

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 1 | | | |
| 2 | -1 | 1 | | | |
| 3 | -1 | -1 | | | |
| a | -1 | 1 | 0 | 10 | 0 |
| b | 1 | 1 | -1 | 0 | 0 |

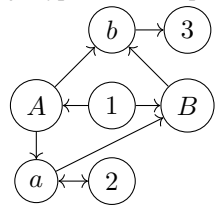
(k) Type II-IIIA PFGAM




(l) Type II-IIIA Graph

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 1 | | | |
| 2 | -1 | 1 | | | |
| 3 | -1 | -1 | | | |
| a | -1 | 1 | 0 | 10 | 0 |
| b | -1 | -1 | 0 | 0 | 1 |

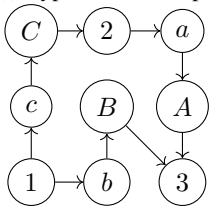
(m) Type II-IIIB PFGAM




(n) Type IIB-III Graph

| | A | B | C | 1 | 2 | 3 |
|---|---|---|---|---|---|---|
| 1 | 0 | 1 | 1 | | | |
| 2 | 1 | 0 | -1 | | | |
| 3 | -1 | -1 | 0 | | | |
| a | 1 | 0 | 0 | 0 | -1 | 0 |
| b | 0 | 1 | 0 | -1 | 0 | 0 |
| c | 0 | 0 | 1 | -1 | 0 | 0 |

(o) Type I-I-I PFGAM

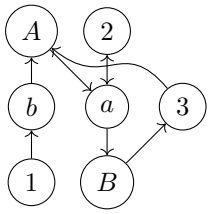



(p) Type I-I-I Graph

Fig. 3: All possible configurations of TPCs with ESS

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 0 | | | |
| 2 | -1 | 1 | | | |
| 3 | 1 | -1 | | | |
| a | -1 | 1 | 0 | 10 | 0 |
| b | 1 | 0 | -1 | 0 | 0 |

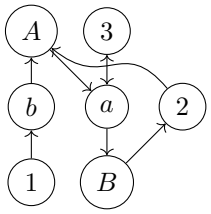
(a) Type I-IIA PFGAM




(b) Type I-IIA Graph

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 0 | | | |
| 2 | 1 | -1 | | | |
| 3 | -1 | 1 | | | |
| a | -1 | 1 | 0 | 0 | 10 |
| b | 1 | 0 | -1 | 0 | 0 |

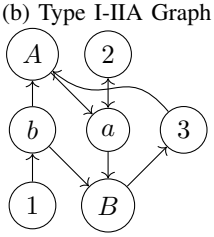
(c) Type I-IIB PFGAM




(d) Type I-IIB Graph

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 1 | | | |
| 2 | -1 | 1 | | | |
| 3 | 1 | -1 | | | |
| a | -1 | 1 | 0 | 10 | 0 |
| b | 1 | 1 | -1 | 0 | 0 |

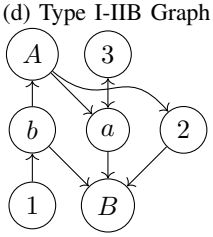
(e) Type II-IIA PFGAM




(f) Type II-IIA Graph

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 1 | | | |
| 2 | -1 | 1 | | | |
| 3 | 1 | -1 | | | |
| a | 1 | -1 | 0 | 0 | 10 |
| b | 1 | 1 | -1 | 0 | 0 |

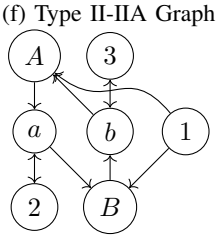
(g) Type II-IIB PFGAM




(h) Type II-IIB Graph

| | A | B | 1 | 2 | 3 |
|---|---|---|---|---|---|
| 1 | 1 | 1 | | | |
| 2 | -1 | 1 | | | |
| 3 | 1 | -1 | | | |
| a | -1 | 1 | 0 | 10 | 0 |
| b | 1 | -1 | 0 | 0 | 10 |

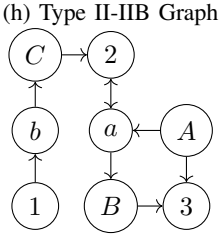
(i) Type II-IIC PFGAM




(j) Type II-IIC Graph

| | A | B | C | 1 | 2 | 3 |
|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 1 | | | |
| 2 | -1 | 1 | -1 | | | |
| 3 | 1 | -1 | 0 | | | |
| a | -1 | 1 | 0 | 0 | 10 | 0 |
| b | 0 | 0 | 1 | -1 | 0 | 0 |

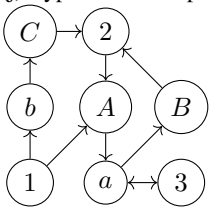
(k) Type I-I-IA PFGAM




(l) Type I-I-I A Graph

| | A | B | C | 1 | 2 | 3 |
|---|---|---|---|---|---|---|
| 1 | 1 | 0 | 1 | | | |
| 2 | 1 | -1 | -1 | | | |
| 3 | -1 | 1 | 0 | | | |
| a | -1 | 1 | 0 | 0 | 0 | 10 |
| b | 0 | 0 | 1 | -1 | 0 | 0 |

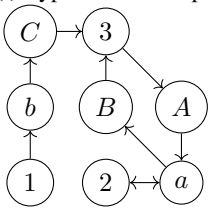
(m) Type I-II-IA PFGAM




(n) Type I-II-IA Graph

| | A | B | C | 1 | 2 | 3 |
|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 1 | | | |
| 2 | -1 | 1 | 0 | | | |
| 3 | 1 | -1 | -1 | | | |
| a | -1 | 1 | 0 | 0 | 10 | 0 |
| b | 0 | 0 | 1 | -1 | 0 | 0 |

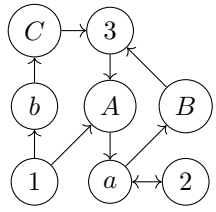
(o) Type I-I-IB PFGAM




(p) Type I-I-IB Graph

| | A | B | C | 1 | 2 | 3 |
|---|---|---|---|---|---|---|
| 1 | 1 | 0 | 1 | | | |
| 2 | -1 | 1 | 0 | | | |
| 3 | 1 | -1 | -1 | | | |
| a | -1 | 1 | 0 | 0 | 10 | 0 |
| b | 0 | 0 | 1 | -1 | 0 | 0 |

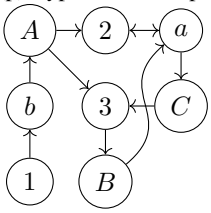
(q) Type I-II-IB PFGAM




(r) Type I-II-IB Graph

| | A | B | C | 1 | 2 | 3 |
|---|---|---|---|---|---|---|
| 1 | 1 | 0 | 0 | | | |
| 2 | -1 | -1 | 1 | | | |
| 3 | -1 | 1 | -1 | | | |
| a | 0 | -1 | 1 | 0 | 10 | 0 |
| b | 1 | 0 | 0 | -1 | 0 | 0 |

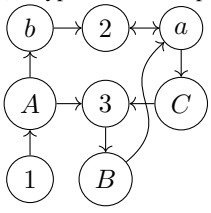
(s) Type I-III-IA PFGAM




(t) Type I-III-IA Graph

| | A | B | C | 1 | 2 | 3 |
|---|---|---|---|---|---|---|
| 1 | 1 | 0 | 0 | | | |
| 2 | -1 | -1 | 1 | | | |
| 3 | -1 | 1 | -1 | | | |
| a | 0 | -1 | 1 | 0 | 10 | 0 |
| b | -1 | 0 | 0 | 0 | 1 | 0 |

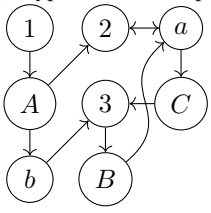
(u) Type I-III-IB PFGAM




(v) Type I-III-IB Graph

| | A | B | C | 1 | 2 | 3 |
|---|---|---|---|---|---|---|
| 1 | 1 | 0 | 0 | | | |
| 2 | -1 | -1 | 1 | | | |
| 3 | -1 | 1 | -1 | | | |
| a | 0 | -1 | 1 | 0 | 10 | 0 |
| b | -1 | 0 | 0 | 0 | 0 | 1 |

(w) Type I-III-IC PFGAM

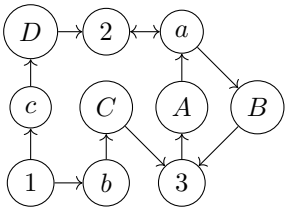



(x) Type I-III-IC Graph

Fig. 4: All possible configurations of TPCs with ESS and Bidirectional Output (Part A)

| | A | B | C | D | 1 | 2 | 3 |
|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 1 | 1 | | | |
| 2 | -1 | 1 | 0 | -1 | | | |
| 3 | 1 | -1 | -1 | 0 | | | |
| a | -1 | 1 | 0 | 0 | 0 | 10 | 0 |
| b | 0 | 0 | 1 | 0 | -1 | 0 | 0 |
| c | 0 | 0 | 0 | 1 | -1 | 0 | 0 |

(a) Type I-I-I-I PFGAM




(b) Type I-I-I-I Graph

Fig. 5: All possible configurations of TPCs with ESS and Bidirectional Output (Part B)