**1.1.1.2**

**A=1 ∧ B=0 ∧ C=1**

**Figure 8.a | Total 15 constraints: A B C: 0 1 0**

**Each has two possibilities, but under 1.1.1 A and B can be different, under 1.1.2 and**

**1.2.1, A and B have to be the same**

**01 1) ((A⊕B) → C)=1**

**1.1 C=1**

**1.1.1.1**

**A=0 ∧ B=1 ∧ C=1**

**1.2.1.1**

**A=0 ∧ B=0 ∧ C=0**

**1.1.2.2**

**A=1 ∧ B=1 ∧ C=1**

**1.2.1.2**

**A=1∧ B=1 ∧ C=0**

**1.2 A⊕B = 0**

**1.1.1**

**A⊕B =1 ∧ C=1**

**1.1.2.1**

**A=0 ∧ B=0 ∧ C=1**

**1.1.2 = 1.2.2**

**A⊕B =0 ∧ C=1**

**1.2.1**

**A⊕B =0 ∧ C=0**

**06 (4) (¬A ∧ B) → (D ∧ F) =1**

**Figure 8.b | Total 15 constraints: A B C: 0 1 0**

**09 3) ((E ∨ F) ↔ G) =1**

**01 (1) ((A⊕B) → C)=1**

**5. H=1**

**1.1 C=1**

**011 (14) (B ∧ F) → (¬D ∨ H) =1**

**04 (12) (A ∨ C) → (B ∨ ¬F) =1**

**1.1.1.1 A=0 ∧ B=1 ∧ C=1**

**3 E=0**

**07 (2) (C ∧ D) → ¬E =1**

**1.1.1.2 A=1∧ B=0 ∧ C=1 ∧ F=0**

**4 G=1**

**6 A=0 ∧ B=1 ∧ C=1 ∧ D=1 ∧ E=0 ∧ F=1∧ G=1∧ H=1**

**A B C D E F G H**

**0 1 1 1 0 1 1 1**

**1.1.1 A⊕B =1 ∧ C=1**

**2 D=1 ∧ F=1**

**1.1.1.0.**

**02 (10) (H ∨ G) → (A⊕B) =1**

**03 (5) (G ∧ H) → (A ∨ B) =1**

**05 (6) (A ∧ ¬B) → (C ∧ ¬E) =1**

**08 (11) ((¬E ∧ F) ↔ (C ∧ D)) =1**

**010 (9) (D ∧ E) → (¬G ∨ F) =1**

**012 (7) (F⊕H) → (D ∨ E) =1**

**013 (8) (¬A ∧ D⊕E) ↔ (H ∨ ¬E )=1**

**014 (13) (G ∧ ¬H) → (E ∨ ¬A) =1**

**015 (15) (¬A ∨ H) ↔ (E ⊕ D) ∨ (G ∧ ¬C)=1**

**7 (¬B ∨ F⊕H) ↔ (¬D ∨ E ) ∨ (G ∨¬C) =0**

**011 (3) ((E ∨ F) ↔ G) =1**

**012 (5) (G ∧ H) → (A ∨ B)=1**

**4 H=0**

**010 (11) ((¬E ∧ F) ↔ (C ∧ D)) =1**

**1.1.1.2 A=1 ∧ B=0 ∧ C=1 ∧ F=0**

**07 (6) (A ∧ ¬B) → (C ∧ ¬E) =1**

**8 013 (7) (F⊕H) → (D ∨ E) =1**

**014 (15) (¬A ∨ H) ↔ (E ⊕ D) ∨ (G ∧ ¬C)=1**

**3 G=0**

**6 A B C D E F G H**

**1 0 1 0 0 0 0 0**

**2 D=0**

**1 E=0**

**Figure 8.b | More restricted-13 constraint (2 cases): A B C 1 0 1**

**1.1.1.2.0**

**05 (4) (¬A ∧ B) → (D ∧ F) =1**

**06 (14) (B ∧ F) → (¬D ∨ H) =1**

**08 (2) (C ∧ D) → ¬E =1**

**09 (9) (D ∧ E) → (¬G ∨ F) =1**

**7A B C D E F G H**

**1 0 1 0 0 0 0 1**

**5 H=1**

**9 8) (¬A ∧ D⊕E) ↔ (H ∨ ¬E )=0**

**06 (3) ((E ∨ F) ↔ G) =1**

**02 (10) ((H ∨ G) → (A⊕B)) =1**

**012 (11) ((¬E ∧ F) ↔ (C ∧ D)) =1**

**014 (15) (¬A ∨ H) ↔ (E ⊕ D) ∨ (G ∧ ¬C)=1**

**5 D=0**

**1.1.2 = 1.2.2 A⊕B = 0 ∧ C=1**

**1 H=0 ∧ G=0**

**6 A B C D E F G H**

**1 1 1 0 0 0 0 0**

**4 E=0 ∧ F=0**

**Figure 8.c | Explore 1.2.2: A B C 1 1 1**

**7**

**03 (5) (G ∧ H) → (A ∨ B) =1**

**04 (13) (G ∧ ¬H) → (E ∨ ¬A) =1**

**05 (9) (D ∧ E) → (¬G ∨ F) =1**

**07 (2) (C ∧ D) → ¬E =1**

**08 (14) (B ∧ F) → (¬D ∨ H) =1**

**09 (12) (A ∨ C) → (B ∨ ¬F) =1**

**010 (6) (A ∧ ¬B) → (C ∧ ¬E) =1**

**011 (7) (F⊕H) → (D ∨ E) =1**

**013 (4) (¬A ∧ B) → (D ∧ F) =1**

**8) (¬A ∧ D⊕E) ↔ (H ∨ ¬E )= 0**

**6 A B C D E F G H**

**0 0 1 0 0 0 0 0**

**05 (3) ((E ∨ F) ↔ G) =1**

**04 (10) (H ∨ G) → (A⊕B) =1**

**3 D=0**

**5. A=0 ∧ B=0 ∧ C=0**

**013 (11) ((¬E ∧ F) ↔ (C ∧ D)) =1**

**2 E=0 ∧ F=0**

**1.2.1 A⊕B = 0 ∧ C=0**

**1 G=0 ∧ H=0**

**Figure 8.d | if want more exploration A B C: (0 0 0) and (1 1 0)**

**|**

**1.2.1.0**

**02 (2) (C ∧ D) → ¬E =1**

**03 (4) (¬A ∧ B) → (D ∧ F) =1**

**06 (6) (A ∧ ¬B) → (C ∧ ¬E) =1**

**07 (9) (D ∧ E) → (¬G ∨ F) =1**

**08 (14) (B ∧ F) → (¬D ∨ H) =1**

**09 (13) (G ∧ ¬H) → (E ∨ ¬A) =1**

**010 (5) (G ∧ H) → (A ∨ B) =1**

**011 (7) (F⊕H) → (D ∨ E) =1**

**012 (12) (A ∨ C) → (B ∨ ¬F) =1**

**8 A B C D E F G H**

**0 0 0 1 0 0 0 0**

**4 D=1**

**11 014 (15) (¬A ∨ H) ↔ (E ⊕ D) ∨ (G ∧ ¬C)=1**

**12 015 (8) (¬A ∧ D⊕E) ↔ (H ∨ ¬E)= 1**

**13 (¬B ∨ F⊕H) ↔ (¬D ∨ E ) ∨ (G ∨¬C) =1**

**7 A B C D E F G H**

**0 0 0 0 0 0 0 0**

**10 A B C D E F G H**

**1 1 0 0 0 0 0 0**

**9 A B C D E F G H**

**1 1 0 1 0 0 0 0**

**6 A=1 ∧ B=1 ∧ C=0**

**02 10) (H ∨ G) → (A⊕B) =1**

**03 8) (¬A ∨ D⊕F) ↔ (H ∨ ¬E )=0**

**1.2 A⊕B = 0**

**1 G=0 ∧ H=0**

**Figure 8.d | Choose most constraints from the biggest set Figure 8.a (excluding 255 rows)**