Properties of Classical Sets

$$A \cup B = B \cup A,$$

Associativity

$$A \cup (B \cup C) = (A \cup B) \cup C,$$
$$A \cap (B \cap C) = (A \cap B) \cap C.$$

Distributivity

$$A \cup (B \cap C) = (A \cup B) \cap (A \cup C),$$
$$A \cap (B \cup C) = A \cap B) \cup (A \cap C).$$

Idempotency

$$A \cup A = A,$$
$$A \cap A = A.$$

Identity

$$A \cup \phi = A$$
$$A \cap X = A$$
$$A \cap \phi = \phi$$
$$A \cup X = X.$$

Transitivity

$$\text{If } A \subseteq B \subseteq C, \text{ then } A \subseteq C.$$

Involution

$$\overline{\overline{A}} = A.$$

Law of excluded middle $A \cup \overline{A} = X.$

Law of contradiction. $A \cap \overline{A} = \phi.$

De Morgan's Law

$$\overline{A \cap B} = \overline{A} \cup \overline{B},$$
$$\overline{A \cup B} = \overline{A} \cap \overline{B}.$$

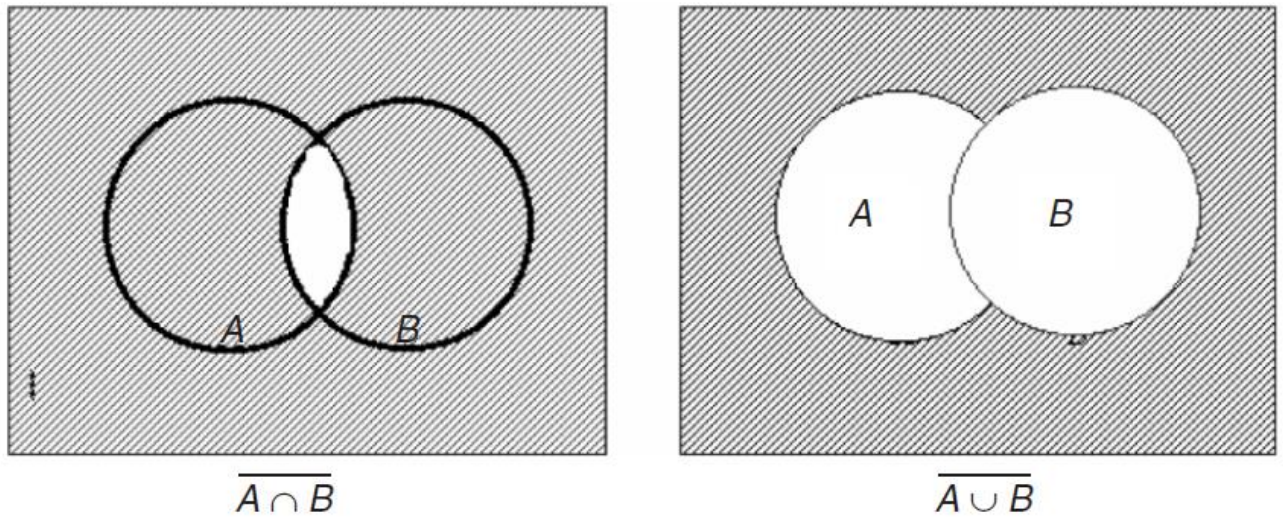

Fig. 2. Demorgan's law