**Modulo groups**-

Modulo groups, or more accurately, groups with modulo operations, can arise in various algebraic structures. Here are a few examples:

1. Modular Arithmetic: Modular arithmetic is a system of arithmetic operations performed on integers that are taken modulo a given positive integer "n". The set of integers modulo "n" forms a group under addition and a group under multiplication. For example, Z/nZ is the group of integers modulo "n" under addition, and (Z/nZ)^\* is the group of invertible integers modulo "n" under multiplication.
2. Rings and Fields: In abstract algebra, rings and fields are algebraic structures that include addition and multiplication operations. In these structures, the concept of modulo can be applied to the addition operation. For example, in the ring of integers modulo "n" (denoted as Z/nZ), the addition operation is performed modulo "n", creating a group structure.
3. Quotient Groups: Quotient groups, also known as factor groups, arise in group theory when a subgroup is factored out of a larger group. The resulting quotient group inherits the group structure and can involve modulo operations. For example, in a cyclic group G generated by an element "g", the subgroup generated by "g^k" (where "k" is a positive integer) can be factored out, resulting in a quotient group where the operation involves modulo "k".
4. Finite Fields: Finite fields, or Galois fields, are algebraic structures with a finite number of elements. The elements in a finite field form a group under addition, and the nonzero elements form a group under multiplication. The arithmetic operations in finite fields involve modulo operations. For example, the finite field GF(p) consists of the integers modulo a prime number "p", and the arithmetic operations are performed modulo "p".

Modulo operations in algebraic structures allow for the consideration of remainders or equivalence classes with respect to a given modulus. They provide a way to create groups or quotient groups with specific algebraic properties. Modulo groups have applications in various areas of mathematics, including number theory, cryptography, coding theory, and computer science.