Note: following IEEE 754 standard, a 64-bit floating-point number $b_{63}\underline{b_{62}\cdots b_{52}}b_{51}\cdots b_0$ represents the following binary real number (except for some special values)

$$\pm \underbrace{1.b_{51}\cdots b_0}_{\text{53 bits}} \times 2^{b_{62}\cdots b_{52}-1023}.$$

called mantissa