$$
\begin{aligned}
&\left(x_1 \bmod m + x_2 \bmod m + \ldots + x_i \bmod m\right) \bmod m \\
&= \left[\left(x_1 \bmod m + x_2 \bmod m + \ldots x_{i-1} \bmod m\right) \bmod m + x_i \bmod m\right] \bmod m \\
&= \left[\left[\left(x_1 \bmod m + x_2 \bmod m + \ldots + x_{i-2} \bmod m\right) \bmod m + x_{i-1} \bmod m\right] \bmod m + x_i \bmod m\right] \bmod m \\
&= \left[\left[\left[\left[\left[\left(x_1 + x_2\right) \bmod m + x_3 \bmod m\right] \bmod m\right] \ldots\right] \bmod m + x_{i-1} \bmod m\right] \bmod m + x_i \bmod m\right] \bmod m
\end{aligned}
$$

$$
\begin{aligned}
&\left(x_1 + x_2 + \ldots + x_i\right) \bmod m \\
&= \left[\left(x_1 + x_2 + \ldots + x_{i-1}\right) \bmod m + x_i \bmod m\right] \bmod m \\
&= \left[\left[\left(x_1 + x_2 + \ldots + x_{i-2}\right) \bmod m + x_{i-1} \bmod m\right] \bmod m + x_i \bmod m\right] \bmod m \\
&= \left[\left[\left[\left[\left[\left(x_1 + x_2\right) \bmod m + x_3 \bmod m\right] \bmod m\right] \ldots\right] \bmod m + x_{i-1} \bmod m\right] \bmod m + x_i \bmod m\right] \bmod m
\end{aligned}
$$

$$
\therefore \left(x_1 + x_2 + \ldots + x_i\right) \bmod m = \left(x_1 \bmod m + x_2 \bmod m + \ldots + x_i \bmod m\right) \bmod m
$$