Table 1: Classification of the GHD family (α and β are interchangeable)

Parameters			Conditions	Range	Type
$\gamma > 0$	$0 < \lambda \le 1$	$\alpha, \beta > 0$	$\gamma > \alpha + \beta$ if $\lambda = 1$	$[0, \infty)$	I
		$\alpha, \beta \in \mathbb{C},$ $\alpha = \bar{\beta}$	$\gamma > \alpha + \beta$ if $\lambda = 1$	$[0, \infty)$	II
		$\alpha, \beta < 0,$ $\alpha, \beta \notin \mathbb{Z}^-$	$[\alpha] = [\beta]$	$[0, \infty)$	III
	$0 < \lambda$	$\alpha, \beta < 0,$ $\alpha \in \mathbb{Z}^-$	$|\beta| > |\alpha| - 1$	$[0, |\alpha|)$	IV
	$\lambda < 0$	$\alpha \in \mathbb{Z}^-, \beta > 0$		$[0, |\alpha|)$	V
$\gamma < 0$	$0 < \lambda \le 1$	$\alpha < 0, \alpha \notin \mathbb{Z}^-,$ $\beta > 0$	$[\alpha] = [\gamma],$ $\gamma > \alpha + \beta$ if $\lambda = 1$	$[0, \infty)$	VI
	$0 < \lambda$	$\alpha \in \mathbb{Z}^-, \beta > 0$	$|\gamma| > |\alpha| - 1$	$[0, |\alpha|)$	VII
	$\lambda < 0$	$\alpha, \beta < 0,$ $\alpha \in \mathbb{Z}^-$	$|\gamma|, |\beta| > |\alpha| - 1$	$[0, |\alpha|)$	VIII