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The continuous-time quantum walk on a graph  $X$  is given by the unitary operator  $e^{-itA}$ , where  $A$  is the adjacency matrix of  $X$ .

Interesting phenomena include fractional revival and instantaneous uniform mixing. A graph  $X$  admits fractional revival from  $u$  to  $v$  at time  $\tau$  if

$$e^{-i\tau A} = \alpha e_u + \beta e_v,$$

for some  $\alpha, \beta \in \mathbb{C}$ . Here  $e_u$  and  $e_v$  denote the characteristic vectors of vertices  $u$  and  $v$ , respectively. Perfect state transfer from  $u$  to  $v$  and periodicity at  $u$  are two special cases of fractional revival with  $\alpha = 0$  and  $\beta = 0$ , respectively.

Instantaneous uniform mixing happens when  $\sqrt{n}e^{-i\tau A}$  is a complex Hadamard matrix.

In this talk, we find graphs in the binary Hamming scheme that admit fractional revival or instantaneous uniform mixing using the eigenvalues of the scheme (Krawtchouk Polynomials).

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