Algorithm 1 fuzzy k-partite clustering

Input: k-partite graph G with possibly non-negatively weighted edge matrices $\mathbf{A}^{(ij)}$, $i < j$, number of clusters $m_1, \ldots, m_k$

Output: fuzzy clustering $\mathbf{C}^{(i)}$ and k-partite cluster graph H given by matrices $\mathbf{B}^{(ij)}$

Initialize $\mathbf{C}^{(i)}, \mathbf{B}^{(ij)}$ to random non-negative matrices.
Normalize $c_{rs}^{(i)} \leftarrow c_{rs}^{(i)} / (\sum_t c_{rt}^{(i)})$ for all i, r, s
repeat
  update fuzzy clusters
  for $i \leftarrow 1, \ldots, k$ **do**
    $\mathbf{C}^{(i)} \leftarrow \mathbf{C}^{(i)} \otimes (\sum_{j \neq i} \mathbf{A}^{(ij)} \mathbf{C}^{(j)} \mathbf{B}^{(ij)\top}) \oslash (\sum_{j \neq i} \mathbf{C}^{(i)} \mathbf{B}^{(ij)} \mathbf{C}^{(j)\top} \mathbf{C}^{(j)} \mathbf{B}^{(ij)\top})$
    Normalize $c_{rs}^{(i)} \leftarrow c_{rs}^{(i)} / (\sum_t c_{rt}^{(i)})$ for all r, s
  end
  update k-partite cluster graph H
  for $i \leftarrow 1, \ldots, k-1$ **do**
    for $j \leftarrow i+1, \ldots, k$ **do**
      $\mathbf{B}^{(ij)} \leftarrow \mathbf{B}^{(ij)} \otimes (\mathbf{C}^{(i)\top} \mathbf{A}^{(ij)} \mathbf{C}^{(j)}) \oslash (\mathbf{C}^{(i)\top} \mathbf{C}^{(i)} \mathbf{B}^{(ij)} \mathbf{C}^{(j)\top} \mathbf{C}^{(j)})$
    end
  end
until *convergence*;
Note: $\otimes$ and $\oslash$ symbolize element-wise multiplication and division, respectively.