

# 上智大学数学談話会のお知らせ

日時：2022年10月28日（金）17:30 – 18:30

場所：上智大学四谷キャンパス4号館3階4-398室  
(Zoomによるオンライン配信あり)

講演者：川谷 元 氏（上智大学）

講演題目：グラフの良い向き付けと半辺彩色問題について

講演要旨：For an integer  $t \equiv 0 \pmod{s}$ , a *clockwise  $s$ -labeling* of  $t$ -regular graph embedded on a orientable surface  $\mathbb{F}$  is a labeling of the set of pairs  $(e, x)$  of an edge  $e$  and an endvertex  $x$  of  $e$  satisfying two rules:

- (A1) For each edge  $e = xy$ , the labels of  $(e, x)$  and  $(e, y)$  are different from each other.
- (A2) For each vertex  $x$ , if we trace the edges  $e$  around  $x$  clockwise, the labels of  $(e, x)$  occur cyclically in the order of  $0, 1, \dots, s-1, 0, 1, \dots, s-1, \dots, 0, 1, \dots, s-1$ .

The concept of a clockwise 2-labeling of an embedded even regular graph is strongly related to an *embedding* of a regular digraph  $D$  on a surface  $\mathbb{F}$ , which is vertices and arcs of  $D$  placed on  $\mathbb{F}$  without crossing arcs or overlapping vertices such that for each vertex  $v$ , in-neighbors and out-neighbors of  $v$  alternately appear around  $v$  on  $\mathbb{F}$ . If an even regular undirected graph  $G$  has a clockwise 2-labeling, then we can construct an orientation of  $G$  which becomes an embedded digraph. In this talk, the speaker will introduce the relationship between a good orientation embedding and a clockwise labeling of graphs on surfaces.

Keywords: Edge labeling, plane regular graph, digraph embedding

上智大学数学談話会ウェブサイト：  
<https://dept.sophia.ac.jp/g/st/math/colloquium/>  
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