

To each simple graph  $G$  with at least 2 edges we will associate a *SPQR tree*, which consists of the following data.

- A tree  $T$ .
- To each node  $v \in T$ , an associated *block*  $G_v$  whose underlying graph is triconnected.
- To each edge  $\{u, v\} \in T$ , an (ordered) tuple  $(a, b, c, d)$ , where  $\{a, b\}$  is a virtual edge in  $G_u$  and  $\{c, d\}$  is a virtual edge in  $G_v$ .

A *block* is a multigraph for which every edge is either virtual or non-virtual.

Triconnected graphs are not in general 3-connected.

Triconnected graphs come in three types: S, P, and R.

The triconnected type S graphs are precisely the simple cycles.