**Usual evaluation of foot contact forces in motion analysis**

**Experimental measurement: force platform**
- **Advantages**: reliable results
- **Flaws**: number of steps limited by the number of force plates

**Numerical estimation**
- **Advantages**: number of steps only limited by the motion capture range
- **Flaws**: available models require data related to the compliance between the foot and the ground

**Objective**
Develop a general numerical method able to deal with multiple contact points

**Methods**

- **Biomechanical model**
- **Adding unilateral constraints**
- **Constrained Equations of Motion**
- **Determination of contact status**
- **Solving Equations of Motion**

**Results**

- **Ground reaction force: vertical component**
- **Position of the center of pressure**
- **Ground reaction force: fore-aft component**

**Conclusion**

- **Preliminary but encouraging results**
- **Easy to implement**: no information on the compliance is required, only kinematic and geometric data
- **General method** for multiple contact points: healthy and pathological gait, running, threadmill, jumping, etc.