Current methods of wound closure, such as sutures and liquid adhesives, lead to increased scarring, cost, inconvenience, and possibility for infection. A new approach that combines nanoshell technology with laser tissue welding\(^1\) appears promising. However, the problem of user variability remains to be solved. Team Lazer has designed and built a prototype of an easily applicable device and a user-friendly software to address the concerns of safety and consistency arising from the variables of laser distance, angle, and motion along with the surface temperature of the skin.

### Safety Concerns Addressed

**Patient Safety**
- Temperature monitoring prevents damage to skin
- Modulated laser intensity to prevent burns
- Reduced manipulation of wound → Less opportunity for infection
- Motorized angle adjustment allows for consistent application to skin

**Operator Safety**
- Alarms when critical temperature is reached
- Proximity to skin determined in real-time
- Automatic Shut-off system

### Prototype Requirements
- **Easily Portable**
- **Maximum Safety**
- **Cost < $5 per use**
- **Cost < $1500 per device**
- Operable with minimal training
- Highly Consistent & Repeatable
- Operator friendly computer interface

### Conclusions
- NanoStitch goes one step further than conventional hand-held laser tissue welding technology.
- The incorporation of real-time feedback controlled distance and temperature sensors into a user-friendly software program results in a safer and more consistent wound closure.

### Acknowledgments and References