

## Report on Identified Refactoring Opportunities for SC/ST Refactoring

Each of the identified control-fields represents an SC/ST refactoring opportunity.

### Statistics on Identified Control-Fields:

1. No. of Classes (IPC): 219
2. Classes Qualified for Refactoring (QC): 16
3. %QC: 7.306%
4. No. of Fields in All Classes (IF): 791
5. Identified Control Fields (CF): 17
6. %CF: 2.149%
7. No. of Control-Fields for SC Refactoring: 13
8. No. of Control-Fields for ST Refactoring: 4
9. No. of Control-Fields Associated with More Than 15 Conditional-Statements: 0
10. No. of Control-Fields Associated with 11 to 15 Conditional-Statements: 0
11. No. of Control-Fields Associated with 6 to 10 Conditional-Statements: 2
12. No. of Control-Fields Associated with 2 to 5 Conditional-Statements: 15

**Identified Control-Fields.** A control-field is denoted as <C, f>, where 'f' is a field of a class with fully-qualified name 'C'. Uses = Number of conditional-statements associated with a control-field.

Uses	Replace Type Code with Subclass (SC)	Uses	Replace Type Code with State (ST)
10	<net.sourceforge.jocular.properties.EnumProperty, m_enum>	2	<net.sourceforge.jocular.photons.PhotonTrajectory, i>
8	<net.sourceforge.jocular.properties.BooleanProperty, m_value>		<net.sourceforge.jocular.objects.AbstractOpticsObject, m_selected>
3	<net.sourceforge.jocular.graphs.GraphAxis, log>		<net.sourceforge.jocular.math.SimpleMinimumSolver, m_running>
	<net.sourceforge.jocular.photons.WranglerEvent, m_type>		<net.sourceforge.jocular.math.MultiMinimumSolver, m_running>
	<net.sourceforge.jocular.photons.Photon, m_photonSource>		
	<net.sourceforge.jocular.project.ProjectUpdatedEvent, m_type>		
2	<net.sourceforge.jocular.math.Complex, m_imag>		
	<net.sourceforge.jocular.math.Vector3D, x>		
	<net.sourceforge.jocular.splines.SplinePointTableModel, m_object>		
	<net.sourceforge.jocular.gui.panel3d.OpticsSceneGraphComponent, m_isTransparent>		
	<net.sourceforge.jocular.undo.PropertyEdit, m_owner>		
	<net.sourceforge.jocular.project.OpticsProject, m_dirtyFlag>		
	<net.sourceforge.jocular.graphs.GraphAxis, gridLineSpacing>		